BULLETIN

Corpus Christi Geological Society

and

Coastal Bend Geophysical Society

February 2015
ISSN 0739 5620

American Shoreline, Inc.

Specializing in
Oil & Gas Exploration
& Wind Energy

Compliments of

Paul Strunk, President

Jena Nelson, VP Finance & Administration

Dennis Taylor, VP Geology

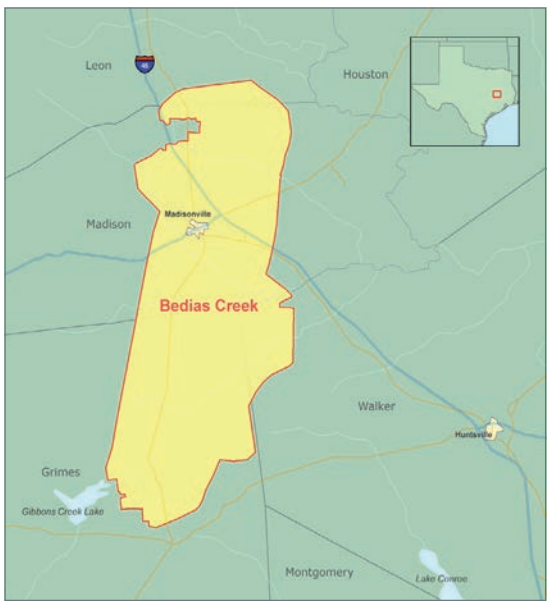
802 N. Carancahua
Frost Bank Plaza, Suite 1250
Corpus Christi, Texas 78401
(361) 888-4496

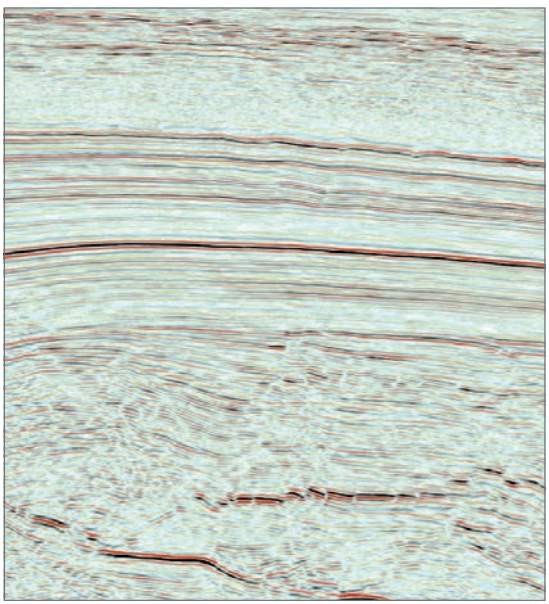
www.amshore.com




Bedias Creek 3D

Madison, Grimes, Walker, and Leon Counties, Texas





- 323 mi² of high-quality, high-fold data (110-fold) acquired using cableless **UNITE** crews and a dynamite source
- State-of-the-art processing, including 5D Interpolation and Orthorhombic Pre-Stack Time Migration
- Data now available

For more detailed information contact us:

Scott Tinley	+1 832 351 8544	scott.tinley@cgg.com
Cheryl Oxsheer	+1 832 351 8463	cheryl.oxsheer@cgg.com

cgg.com/multi-client

CGG
Passion for Geoscience

CORPUS CHRISTI GEOLOGICAL SOCIETY
P.O. BOX 1068 * C.C. TX. 78403
2014-2015
www.ccgeo.org

OFFICERS

President	Leighton Devine	361-510-8872	ldevine@suemaur.com
President Elect			
Vice President	Randy Bissell	361-885-0113	randyb@headington.com
Secretary	Allison Corcoran	361-882-8400	allison@aaoperating.com
Treasurer	Zachary Corcoran	361-658-5850	zcorcoran1982@gmail.com
Past President	Bob Critchlow	361-882-3046	bcritchlow@virtexoperating.com
Councilor I	Rick Paige	361-884-8824	rickp@suemaur.com
Councilor II	Mike Lucente	361-883-0923	mikel@lmpexploration.com

AAPG DELEGATES

2006-14	Dennis Moore	361-886-5144	dennis.moore@bakerhughes.com

EDITORS

Bulletin Editor	Marian Wiedmann	361-855-2542	wiedgulf@aol.com
Bulletin Tech. Editor	Susan Stone	361-739-4759	stonesciences@yahoo.com
Web Master	Chris Davis	361-537-1508	cdavis@spurfire.com

GEOLOGICAL SOCIETY COMMITTEES & CHAIRPERSONS

Advertising	Sara Miller	361-887-2691	sara_miller@eogresources.com
Business Cards	Christian Dohse	361-877-3431	christian.dohse@gmail.com
Arrangements	Allison Corcoran	361-888-8288	allison@aaoperating.com
Bloodmobile	Mike Lucente	361-883-0923	mikel@lmpexploration.com
Earth Day	Alan Costello	361-888-4792	acostello@royalcctx.com
Continuing Ed.	Stephen Thomas	361-888-8880	sthomas@virtexoperating.com
Education & Scholarship	Dawn Bissell	361-960-2151	bissells@swbell.net
Fishing Tournament	Leighton Devine	361-882-8400	ldevine@suemaur.com
History	Ray Govett	361-855-0134	ray30@hotmail.com
Membership	Dorothy Jordan	361-885-0110	dorothyj@headington.com

	Randy Bissell	361-885-0113	randyb@headington.com
Type Logs	Frank Cornish	361-883-0923	frank.cornish@gmail.com
University Liaison	Zach Corcoran	361-902-2857	zcorcoran1982@gmail.com

COASTAL BEND GEOPHYSICAL SOCIETY
P.O. BOX 2741 * C.C. TX. 78403
2014-2015

OFFICERS

President	Lonnie Blake	361-883-2831	lonnie_blake@eogresources.com
Vice President	Bob Witherspoon	361-884-8824	bobw@suemaur.com
Secretary/ Treasurer	Matt Hammer	361-888-4792	mhammer@royalcctx.com

COMMITTEES AND CHAIRPERSONS

Membership	Dorothy Jordan	361-885-0110	dorothyj@headington.com
	Randy Bissell	361-885-0113	randyb@headington.com
Golf Chairman	Fermin Munoz	361 960-1126	fmunoz04@hotmail.com
Scholarship/ Chairman	Ed Egger	361-947-8400	edegger69@gmail.com
Education	Vicki Marlett	214-557-0815	vmarlett@geotrace.com

Visit the geological Web site at www.ccgeo.org

TABLE OF CONTENTS

BLOOD DRIVE

THE BLOODMOBILE – IN **FEBRUARY- 2015**
WILL BE AT SOME CONVENIENT LOCATIONS
PLEASE CALL 855-4943 for those locations or see below:

SHARE THE LOVE, SHARE YOUR BLOOD!

And Happy Valentine's Day!

ATTENTION!!!

When you give blood: They have us listed as C.C. Geological Society. Our number with them is 4254 & it would be helpful if you can please give them that number also.

Thanks! Mike Lucente

www.coastalbendbloodcenter.com

CCGS/CBGS JOINT MEETING SCHEDULE 2014-2015

September 2014						
S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	***10***	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Sept. 10, 2014
5:30p.m.—8:30p.m.
Kickoff BBQ
Howard's BBQ & Catering
1002 Antelope Street

October 2014						
S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	***15***	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Oct. 15—11:30a.m.—1:00p.m.
Speaker: Ken Williams—Halliburton.
"Barostratigraphy"

November 2014						
S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	***19***	20	21	22
23 30	24	25	26	27	28	29

Nov. 19—11:30a.m.—1:00p.m.
Speaker: Tony Hauglum--Rivera Exploration. "Eagleford Update"

December 2014						
S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	***10***	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Dec. 10—11:30a.m.--1:00p.m.
Speaker: Woodson Godfrey—PaleoSource. "Distinguishing a Resource Play

January 2015						
S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	***21***	22	23	24
25	26	27	28	29	30	31

Jan. 21--11:30a.m.—1:00p.m.
Speaker: Lei Zhang—Schlumberger. "Seismic Inversion to Reservoir Simulation"

February 2015						
S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	***18***	19	20	21
22	23	24	25	26	27	28

Feb. 18—11:30a.m.—1:00p.m.
Speaker: Collegiate Month. "Presentation by TAMUCC, TAMUK and DelMar"

CCGS/CBGS JOINT MEETING SCHEDULE 2014-2015

March 2015						
S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	***11***	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 2015						
S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	***15***	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2015						
S	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	***20***	21	22	23
24	25	26	27	28	29	30
31						

March 11—11:30a.m.—1:00p.m.
Speaker: Fred Hilterman
"Seismic Attribute analysis for the Gulf of Mexico"

April 15—11:30a.m.—1:00p.m.
Speaker: Richard Adams—Carr Resources. The Lower Woodbine Organic Shale of Burlenson and Brazos Counties, Texas: Anatomy of a New "Old" Play

Distinguished Speaker--Mark Papa

Calendar of Meetings and Events

Calendar of Area Monthly Meetings

Corpus Christi Geological/Geophysical Society……Third Wed.—11:30a.m.
SIPES Corpus Christi Luncheons…… Last Tuesday—11:30a.m.
South Texas Geological Society Luncheons…….. Second Wed—noon San Antonio
San Antonio Geophysical Society Meetings…….. Fourth Tuesday
Austin Geological Society…….. First Monday
Austin Chapter of SIPES……First Thursday
Houston Geological Society Luncheons…….. Last Wednesday
Central Texas Section of Society of Mining, Metallurgy & Exp…….. 2nd Tues every other month In San Antonio

Licensing Data?

Don't Let Tape Copy Costs - Drive Your Decision

What are your well costs?
$3 MM, $5 MM, $10 MM

100 Square miles of true CA/CP PSTM re-processing
≈ $150,000

100 Square miles of tape copy charges
≈ $20,000 - $40,000

NEGOTIATE
your tape copies of field data
BEFORE signing contract.

DON'T YOU OWE IT
to **YOURSELF** and
YOUR COMPANY
to have the best image before drilling?

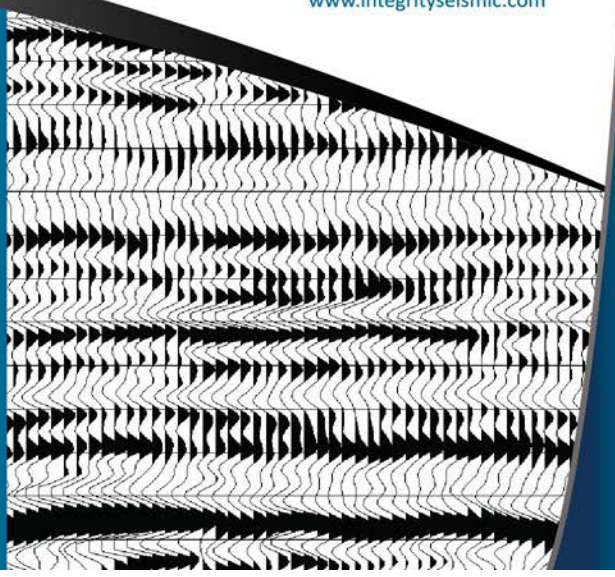
OUR SERVICES
- Onshore and OBC Controlled Amplitude & Controlled Phase (CA/CP) Processing
- Surface Consistent Processing
- Seamless Multi-Survey Merge
- Gather Conditioning with AVO Attributes
- Inversion and Fluid / Lithology Prediction

SENIOR PROCESSING GEOPHYSICISTS
- Daniela Smoleanu / Partner
- Karen Chevis-McCoy / Partner
- Steven Larson / Partner

INTEGRITY SEISMIC SERVICES
(713)357-4706
www.integrityseismic.com

Zane Swope
President - Partner
(713)357-4706 Ext 7006
(281)635-9162 (Cell)
zswope@integrityseismic.com

James Bloomquist
Business Development Manager
(713)357-4706 Ext 7008
(281)660-9695 (Cell)
Jbloomquist@integrityseismic.com



CCGS PRESIDENT'S LETTER

The Corpus Christi Geological Society will be hosting Collegiate Month February 18th for our monthly luncheon meeting. I am eager to hear from our local colleges as they report on the status and direction of their geoscience programs. This event can only strengthen the relationship between our local colleges and the member societies. The CCGS/CBGS members make a difference in our local colleges. In turn, those institutions are changing us. I see this as a huge step in the right direction. I need to recognize our Vice President Randy Bissell for planning this event. Thank you. Your contribution to our society has been unmatched in recent history.

Membership numbers are in and once again we have strong numbers in both the CCGS and CBGS. The CCGS has just under 300 members with over 50 student members. Our membership numbers are great and the attendance numbers at our local meeting are up, but are we prepared for what is on our plate in the near future? Once again I will remind you that we are scheduled to hold the GCAGS Annual Convention in the fall of 2016. Having strong leadership in place will be vital to a successful convention. Volunteerism is an integral part of who and what we are. The CCGS will cease to exist without good people donating their time and energy. Nomination forms for officers will be emailed out to the membership in the near future. I ask everyone to please be involved in this process. If you would like to run for a particular officer positon please let me know. The officer election will take place at the April meeting.

I've been made aware that the annual Family Fossil Hunt is a go for 2015 at the Wright Brothers' Gravel Pit and Quarry. Details have not been finalized, but we should have some news for you at the next meeting. Keep your eyes out for an announcement in the March bulletin. Finally, please come out and join us Tuesday February 17th around 5:30pm at the Executive Surf Club. Ken Orlaska with GeoTrace has agreed to sponsor Pint Night. Once again, thank you to all of our great sponsors. See you next month.

Leighton L. Devine

CCGS President

2015 Gulf Coast Gem & Mineral Society 53rd Show

Marvel at displays of:
- minerals
- fossils
- gems

Shop for:
- jewelry
- minerals
- fossils
- much more from many vendors

Kids young & old
- door prizes
- kids wheel

Admission $5 (valid 2 days)
Kids 12 & under free (with adult purchase)

Sat. March 7th 10am - 6pm
Sun. March 8th 10am - 5pm

Richard M Borchard Regional Fairgrounds, Building A
1213 Terry Shamsie Blvd. Robstown TX 78380 www.GCGMS.org

CBGS PRESIDENT'S LETTER

News - Oil prices are below $50 as I write this. RRC permit requests are off 50%.

Education -

Has anyone taken one of these? I have not, would like someone's opinion. $150 for 8 hours. Includes a lot of geology and geophysics.
http://www.seg.org/professional-development/seg-on-demand/elearning-courses

Parting Thought - "When everything seems to be going against you, remember that the airplane takes off against the wind, not with it." – **Henry Ford**

Seismic Crews - US Onshore	Current Month	Last Month	Difference	(Per SEG/Seismic Crew Reports Survey)
	Onshore/Offshore	Onshore/Offshore		
	44/21	41/18	+6	Nov
	Current Month	Last Month	Last Year - Monthly	(Per Texas RRC, last reported)
Texas Production	MMBO/BCF	MMBO/BCF	MMBO/BCF	
Oil	73.2	77.9	67	Sept
Gas	654	691	704	
	Current Month	Yr to date - 2014	Yr to date - 2013	Nov
Texas Drilling Permits	1,508	24,286	19,852	
Oil wells	376	7,085	6,266	
Gas wells	76	1,342	1,216	
Oil and Gas wells	977	14,826	11,579	
Other	8	184	181	
Total Completions	1,991	27,595	23,311	
Oil Completions	1,570	23,440	17,901	
Gas Completions	380	3,232	4,324	
New Field Discoveries	6	42	49	
Other	41	923	649	

Lonnie Blake—CBGS President

Corpus Christi Geological Society & Coastal Bend Geophysical Society

LUNCHEON MEETING ANNOUNCEMENT

Wednesday, February 18, 2015

Location: Corpus Christi Town Club, 6th Floor (800 North Shoreline)

Bar: Cash bar

Student Sponsor: Core Lab (Juan Cabasos) and the CCGS

Time: 11:30 a.m. Bar, Lunch follows at 11:45 a.m., Speaker at Noon.

Cost: **$25** (a $3 surcharge if no reservation). No-shows will be billed.

Reservations: Please by Monday before – email allison@aaoperating.com

---

Luncheon Topic: Collegiate Month: A Report to the Societies

Presented by Mark T. Ford, TAMUK; Tania M. Anders, TAMUCC, Roger Steinberg, DelMar College, Dawn Bissell, CCGS Scholarship Chairman

An Introduction to the Geosciences Program at TAMUK:

The Geosciences program at Texas A&M University Kingsville is a high quality, student-centered, field-oriented, growing program with a goal of developing students for a career in the geosciences. In addition to a breadth of coursework, we have required field trips for each of our upper division courses, usually three each semester. Our degree plan includes a professional development course, co-taught by industry leaders, and a comprehensive, capstone, seven-week field course, both of which are writing intensive. Over the past ten years, the number of majors in our program has increased by 400%, nearing 60 this semester, and we have graduated 62 majors in the past 5 years. Our graduates are high-achievers with 13% also graduating from the Honor's College while the campus-wide rate is less than 1.5%. The growth of our program continues. This year we will be hiring two tenure-track faculty, begin development of a master's program in petrophysics, continue strong recruiting efforts in the region and develop new courses to interest current TAMUK students. Our students graduate with a diverse background in geosciences, strong field skills and improved writing ability and many of our students are well prepared for graduate school with undergraduate research and teaching assistantships added to their resume.

The Texas A&M University, Corpus Christi geoscience program focuses on giving students a broad, solid foundation to allow graduates to pursue careers in a wide variety of areas upon graduation. We have some specialty areas such as geochemistry, hydrogeology, science education, and paleo-climate according to faculty specializations. The geology program offers the opportunity for a rigorous, practical geological education taught by an international faculty with a variety of backgrounds. Students

continued on page 14

can get involved with research, graduate from our Honor's program, participate in study abroad, and get a solid science writing foundation. Currently TAMUCC offers a BS in geology and an Environmental Sciences Masters with focus on geology. There are 80-85 undergraduate students and 3 - 5 masters candidates. In the future, we hope to continue to grow as a program, including offering a Masters degree in geology. Most of our recent graduates have pursued professional employment, predominantly in Texas. Primary reasons include financial obligations as well as the desire to gain practical experience before applying for graduate school. Several students have applied directly for graduate school upon graduation. Through our campus presentations by CCGS/CBGS members, our students have learned so much from the life experiences and career advice that society members have provided.

Del Mar College offers an AS Geology degree focusing on basic and broad knowledge, coastal studies, and field work. Small class size and personal attention is a major plus at Del Mar. We collaborate with TAMUK on a 3-day field camp in central Texas and a Winter one-week course. Our Geoscience Club also helps to keep our geology majors excited about geology. There are 35-40 undergraduate geology majors/semester. A significant number of these students become declared geology majors only after taking our Physical Geology and Historical Geology classes. Most of our graduates have transferred to TAMUCC and TAMUK, with others going to UT Austin, UT Dallas, UT San Antonio, and TAMU College Station. Many local geology personnel got their start at DMC. Robbie Greis (past president of AAPG) started at DMC. Del Mar will continue to look for funding for field trips and equipment to provide the greatest opportunities for our students. We will also partner with local speakers for our STEM Natural Science Lecture Series.

About our Speakers:

Mark T. Ford is an assistant professor in the Department of Physics and Geosciences at Texas A&M University – Kingsville. He graduated from Alfred University in 1995 with a BA in geology and mathematics and then worked in the ceramics industry for Corning Incorporated. He returned to school earning his MS in geology from Idaho State University and PhD in geology from Oregon State University. Over much of the past decade he has roamed the high places and "lava plains" of Oregon and Idaho, working on volcanic systems related to the Yellowstone Hotspot, Newberry Volcano, and Cascades Arc. During that time he also worked with a wide array of geoanalytical techniques to characterize the major, trace and isotopic compositions of igneous rocks and better understand petrogenesis in igneous systems. He started at TAMUK in 2013 where he is expanding his research to include pegmatite mineralization in the Llano uplift and volcanism in Big Bend National Park.

Tania M. Anders, is a Professional Assistant Professor, Texas A&M University Corpus Christi. She received her Diploma from Friedrich-Alexander University in 1993 and her PhD from Christian-Albrechts University in1997. Since coming to TAMUCC in 2001 she has instructed over 4,000 students in 15 different courses, seven of which she developed. She introduced a geology course for non-science majors. Prior TAMUCC, she was a high school teacher in Monterey, CA, for Earth Sciences, Oceanography, and Mathematics. It was during this time that she discovered her passion for teaching. Before venturing into teaching, she was a marine geoscientist on several research cruises, adding up to over four months at sea, mostly in the

continued on page 15

Arctic Ocean. Tania was the TAMUCC geology program coordinator for five years from 2009-2014. Since rotating out of that position, she focuses her time in growing undergraduate research opportunities, developing more field trip and travel opportunities including study abroad. She was one of the founding faculty members for teaching core curriculum courses abroad (Turkey, 2010) and is currently the lead faculty in developing a study abroad program for the Physical Sciences (Scotland, planned for summer 2015). She continues to serve as the lead faculty for geoscience education and outreach at TAMUCC.

Roger Steinberg is an Associate Professor at Del Mar College. He earned his BA in Geology with High Honors from University of Tennessee, Knoxville, TN in 1974 and his MS in Geology from the University of Tennessee, Knoxville, TN in 1981. Roger has been associated with Del Mar College since 1990. While in college, Roger initiated and supervised comprehensive mineral exploration programs utilizing geological, geochemical and geophysical surveys throughout the United States, including Alaska,1973 - 1982. In 1986 he analyzed data on the hydrocarbon potential of the Arctic National Wildlife Refuge as a major consulting project for The Wilderness Society. From 1982 - 1996, Roger generated dozens of major projects in South Texas to profitably find and develop new hydrocarbon reserves worth millions of dollars. In October of 2014 Roger was named as a "Top Contributor" for the "On the Cutting Edge" Professional Development for Geoscience Faculty Program's website, part of the Science Education Resource Center (SERC) at Carlton College, MN. He has participated in and presented at many higher education workshops. He has reviewed text books and articles for the British scientific journal *Nature*. He has published on topics of sedimentation, online weather studies, crystallography, carbonates, and hydrologic flow.

sponsors

SPONSORS

Corpus Christi Geological Society
Scholarship Application Guidelines
Summer/Fall 2015 Semester

1. Applicant must be majoring in Earth Sciences and currently attending a college in the local area.

2. Fill out the application form clearly, completely, and sign it.

3. Short essay clearly explaining how this scholarship will assist you in achieving your geologic career goals and the reasons your application should be considered by the Committee.

4. Two (2) letters of recommendation - one must be from a geoscience faculty member or from a supervisor with whom applicant has worked within a geoscience undertaking.

5. Applicant must provide a school transcript, please make sure it has your name on it. A web printout is acceptable.

6. **Applications must be postmarked by: March 21, 2015**
   Mail completed application to: Dawn Bissell, CCGS Scholarship Committee Chairman, 253 Circle Drive, Corpus Christi, TX 78411

Email **bissells@swbell.net** once you've mailed your application. If I do not receive an email, I won't be able to notify you if you've been selected. ***Award notifications will be sent via email!!!***

Please read requirements carefully and submit only complete applications. Applicants who have received a CCGS scholarship in the past <u>are</u> eligible to apply again.

Scholarships will be awarded based on merit and need. The award amounts may vary with the minimum individual award being $500.

Award recipients will be recognized at the monthly **luncheon April 15, 2015** and are encouraged to attend.

Board Members:
Dawn Bissell - Chairman
Brent Hopkins - Vice Chairman
Leighton Devine - CCGS President
Patrick Nye - Secretary/Treasurer
Bob Critchlow - Member
Beth Priday - Member
JR Jones - Member

continued on page 19

Corpus Christi Geological Society
Scholarship Application Form
Summer/Fall 2015

(Must be postmarked by March 21, 2015)

Last Name: First Name:

Mailing address:
(where award may be mailed if applicant is unable to attend award presentation)

City: State: Zip Code:

Active Email:

*Award notifications will be sent via email!!! Email **bissells@swbell.net** once you've submitted your application.*

Daytime Phone: Alternate Phone:

University Currently Attending:

Department: Major:

Scholarship is for class level (circle one):

Freshman Sophomore Junior Senior Graduate Student

Total Hours Completed: Overall GPA (Minimum 2.5):

Total Hours - Geology: Geology GPA(Minimum 3.0)

Hours Planned for Scholarship Semester: Geology Hours:

Will this scholarship be used toward field camp? Yes No

Prior recipient of CCGS Scholarship? Yes No

Applicant Signature Date

Mail application, along with essay, two letters of recommendation, and transcript to
Dawn Bissell, CCGS Scholarship Committee Chairman
253 Circle Drive, Corpus Christi, TX 78411 **Must be postmarked by March 21, 2015.**
Email bissells@swbell.net once you've mailed your application. **Award notifications will be made via email!!!**

MORE CLIMATE CHANGE

This paper is intended to supplement what was published by the Corpus Christi Geological Society in the February 2000 bulletin. Recent events and discoveries have shed more light on how Earth's climate is changing, and why.

Magnetic poles of the sun change about every eleven years and are probably at least partially responsible for the eleven-year weather cycle on Earth. The sun's north magnetic pole finished changing in June 2012, and the south magnetic pole finished changing in January 2014 according to the article referenced for PLATE I. At least partly due to the fact the sun's magnetic field weakened prior to the pole change, the weather change on Earth was not as radical as it usually is. There were floods in different parts of the World, droughts in parts of the World, but no real catastrophic events happened. The two poles do not move simultaneously with one another, as a result the sun's North Pole is not always opposite the South Pole.

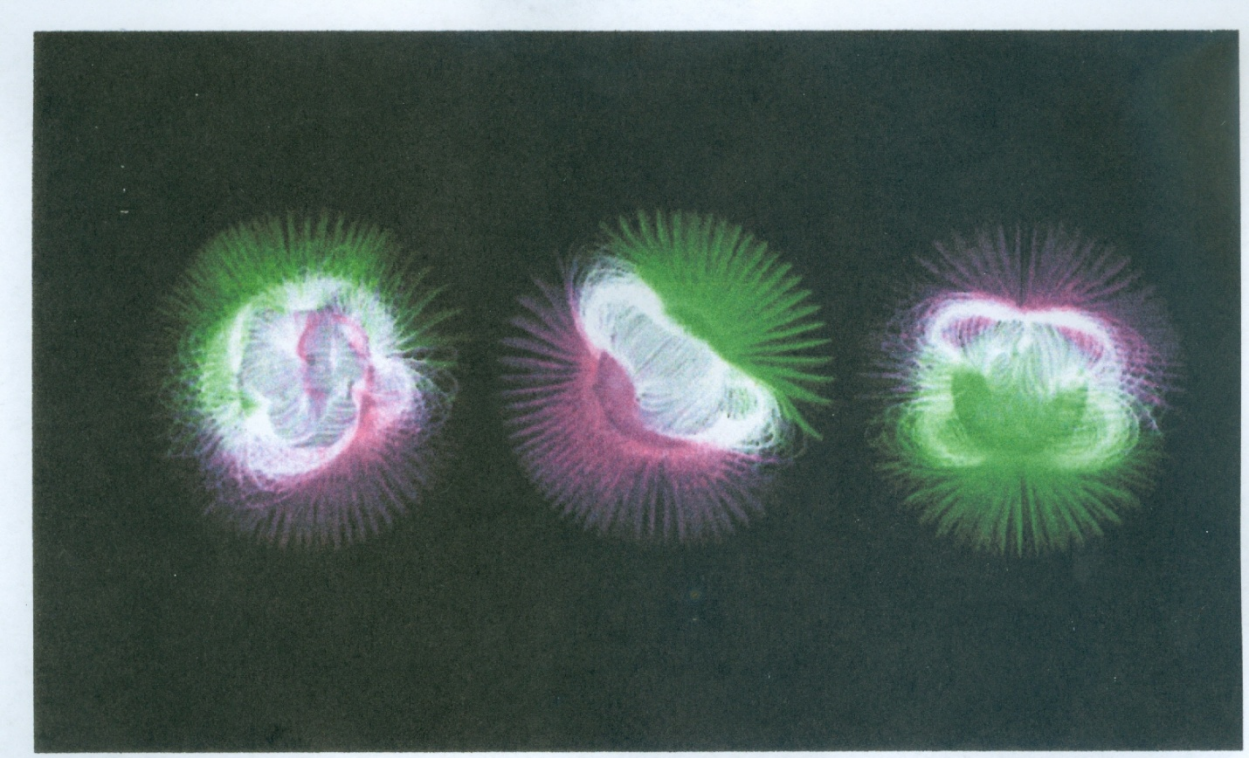


Image showing the sun's magnetic fields on Jan. 1, 1997, June 1, 2003, and Dec. 1, 2013. Green indicates postive polarity. Purple is negative.

PLATE I. This image and the one below are from an Internet article by C. Alan Young, Ph.D., with the Goddard Space Flight Center, entitled, "The Sun Today."

Notice the sun's magnetic, positive North Pole is at the top in 1997 and the magnetic South Pole is at the bottom. The magnetic positive pole is at the bottom in 2013 and the magnetic negative pole is at the top. In between, in 2003, the magnetic poles are tilted to the right. Sun's magnetic

continued on page 22

poles weaken, go to zero, and then emerge with the opposite polarity. The magnetic poles of Earth are probably performing in a similar manner, only very much slower, and will probably not go to zero.

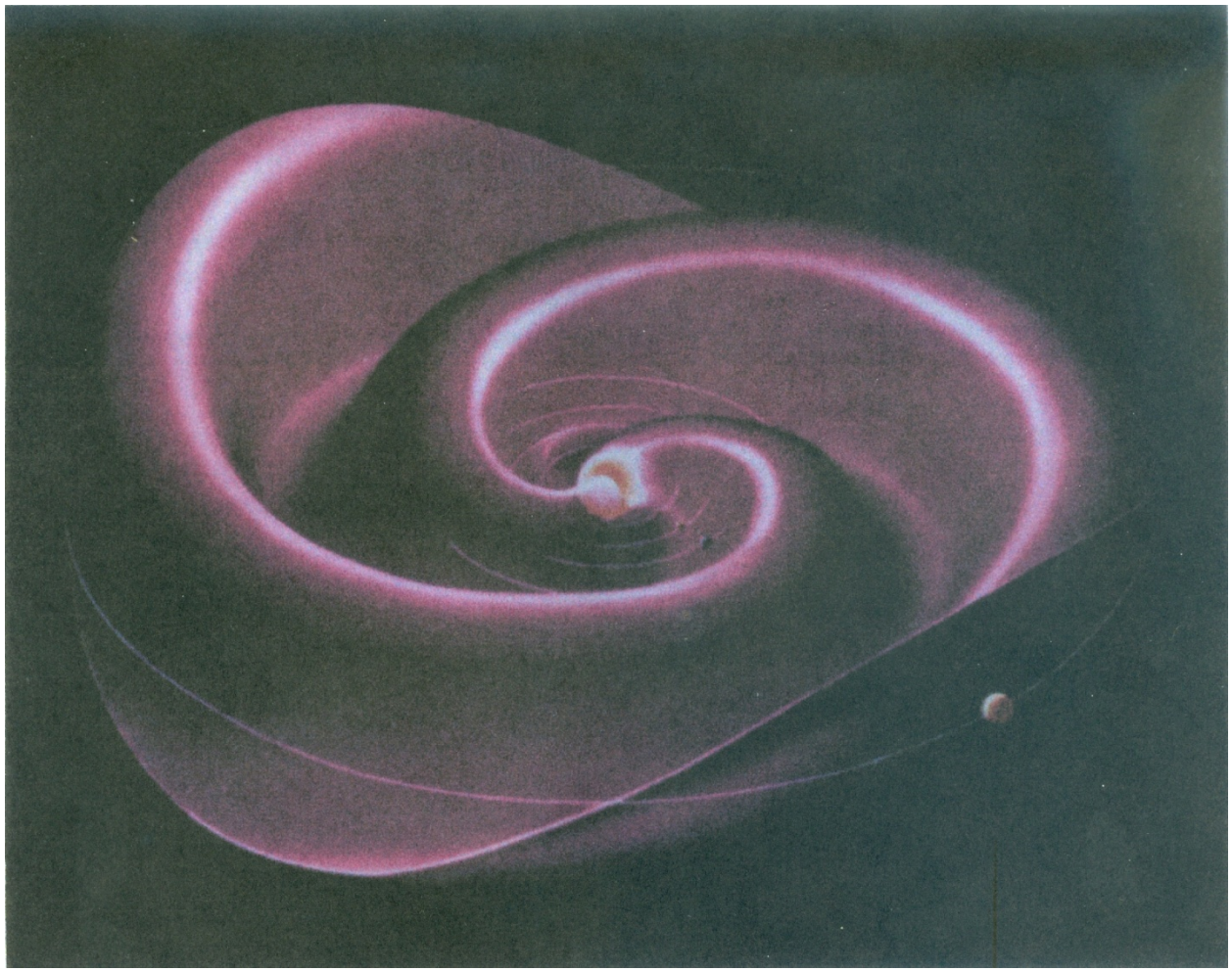


PLATE II An illustration of the heliospheric current sheet: Credit NASA

The sun is a big ball of hot gases, probably about 5 billion years old and will probably last another 5 billion years. The gases are converted into energy in the sun's core. The energy moves outward through the interior layers of the sun, into the sun's atmosphere, and is released into the solar system as heat and light. Hydrogen makes up about 72% of the sun's gases. Twenty-six percent of the gases in the sun are helium. Trace amounts of Oxygen, Carbon, Nitrogen, Silicon, Magnesium, Neon, Iron and Sulfur are also present.

The sun rotates on an axis similar to the way the earth rotates. Since the sun is made up of gases, the rotation is slower at the poles than at the equator. It takes about 25 days for the sun to make a complete rotation at the equator and about 35 days to make a complete rotation at the poles. The equatorial diameter of the sun is about 864,938 miles. The difference between the polar diameter and the equatorial diameter is only about 6.2 miles, which seems odd in light of the different speed of rotation at the poles and the equator. The sun's universe consists of the sun,

continued on page 24

SPONSORS


KNOWLEDGE REVEALED
PURPOSE DRIVEN
• Unrivaled land seismic acquisition capabilities
• Specific solutions for all terrains and environments (land, shallow water/transition zone and OBC)
• Purpose driven crews with proven experience around the world
• Processing and Interpretation services revealing the project knowledge you need
• Full azimuth 3D and 3C coverage in unconventional resource plays
• Multi-Client opportunities in North America, Latin America and Australasia
• Proven experience in:
– Azimuthal anisotropy resolution and fracture identification
– Multicomponent processing
– AVO processing and inversion
INNOVATIVE GEOPHYSICAL SOLUTIONS
Geokinetics
geokinetics.com

the planets rotating around the sun, space between the plants, and it extends thousands of miles beyond the orbit of the planet most distant from the sun.

The magnetic field of the sun is generated by a complex process inside the sun called the solar dynamo. This magnetic field extends throughout the sun's universe. The sun's universe is only a small part of the total universe. This energy is distributed throughout the sun's universe in waves, similar to that shown in PLATE II. This magnetic field is referred to as the sun's heliosphere. The waves shown in PLATE II become more uneven during times the sun is changing poles. Measurement of sun's magnetic field primarily comes from the Wilcox Solar Observatory at Stanford University, where they have been measuring the sun's polar fields for over 40 years.

Sun's magnetic field is weaker now than it has been in the last 100 years. Sunspots, which are masses of solar gas, periodically accumulate on the surface of the sun. Large solar flares sometimes erupt from areas on the surface of the sun near the sunspots. Coronal mass ejections, which are large bursts of hot plasma that shoot out from the sun, sometimes follow solar flares. Sun spot activity and the number and size of solar flares have remained fairly constant over the last few years, but their effect here on Earth has been minimal due to the sun's weak magnetic field. With the radius of the sun at 432,469 miles, PLATE III gives the viewer an idea about the distance some of these solar flares travel from the sun. The energy of the solar flare is not traveling away from the sun perpendicular to the surface of the sun in that picture. The energy from the solar flares travels much farther than that captured on the picture. The picture is only able to show the visible energy of the sunspot.

Although solar flares do not appear to have a direct influence on weather on Earth, it is the opinion of this writer that solar flares may cause variations in the sun's heliosphere. If Earth happens to be in an orbit that is passing through an area disturbed by a large solar flare, that solar flare could slightly alter Earth's magnetic field, which would change weather patterns on Earth. PLATE IV was taken about 18 hours after the first, showing how quickly this activity comes and goes.

All planets in our universe pass through the suns magnetic field. Strength of this magnetic field and its influence on Earth and the other planets will vary as shown on PLATE II. There are waves of higher and lower strength in the sun's magnetic field. Cosmic rays are supper high-energy particles created by super nova explosions and other events outside our solar system. Sun's wavy current sheet helps deflect cosmic rays, keeping them out of the inner solar system.

Solar wind streams off the sun in all directions at about 1 million miles per hour. Solar winds are created in the sun's corona, which is the outer atmosphere of the sun. The sun's corona consists of super heated gases from the body of the sun. Hydrogen and helium are the dominant gases making up the sun. Hydrogen and helium are heated to temperatures greater than 1,800,000 degrees Fahrenheit. This high temperature strips hydrogen, helium, and most of the other elements found in the sun, of their electrons, leaving only the nuclei. These temperatures are so high sun's gravity is not able to hold the nuclei of these atoms on its surface and they exit the corona at speeds between 185 and 500 miles per second. These magnetic clouds move away from the surface of the sun and interact as they do so, the faster moving clouds of magnetic

continued on page 26

SPONSORS

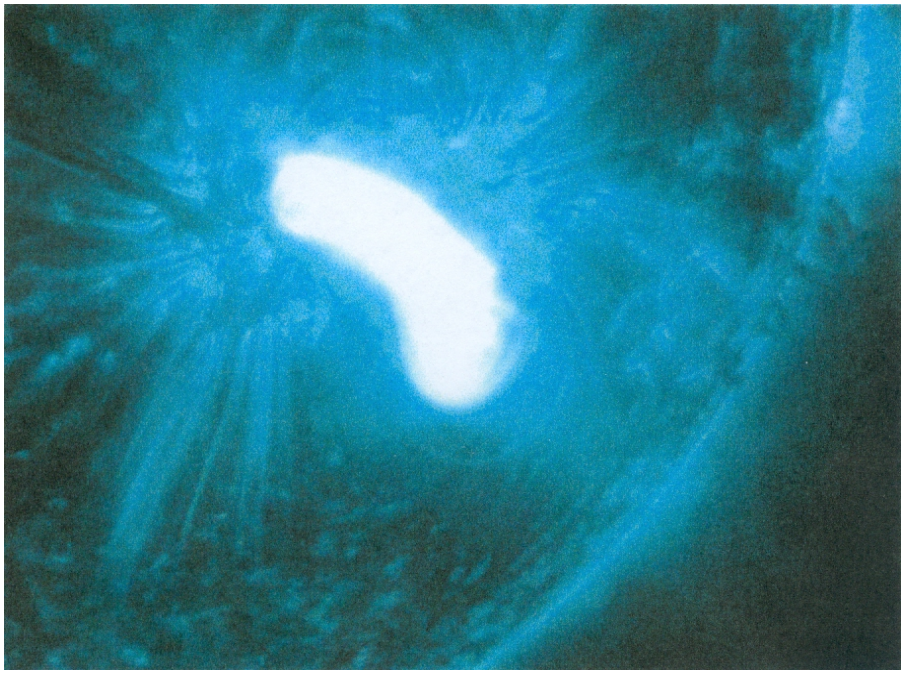


PLATE III Solar flare emitted from the cluster of sunspots. Picture was taken by NASA at 1:08 P.M. Eastern Daylight time, October 25, 2014.

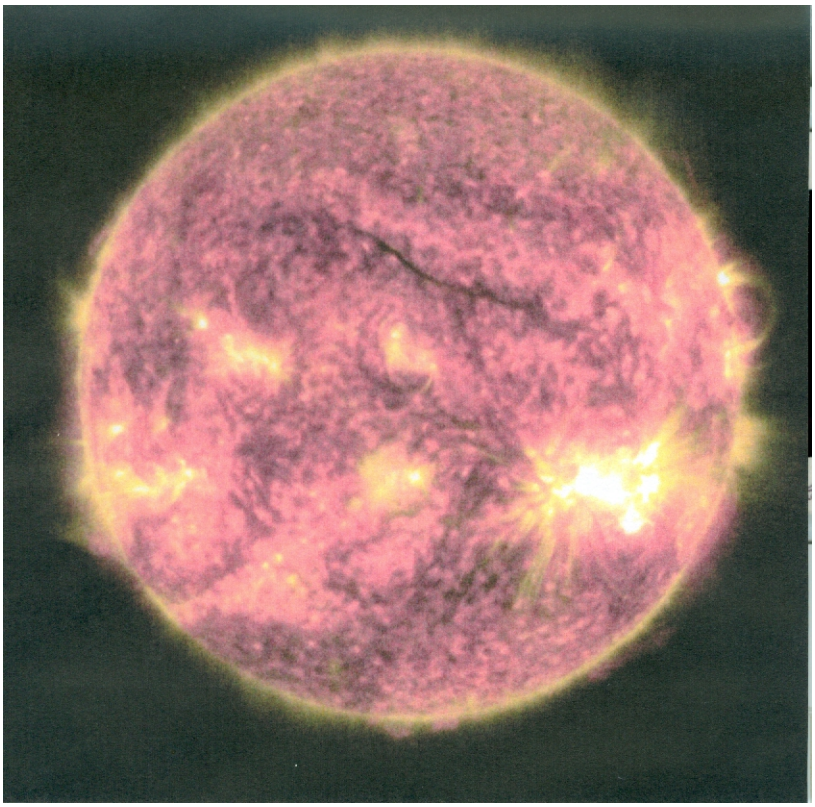


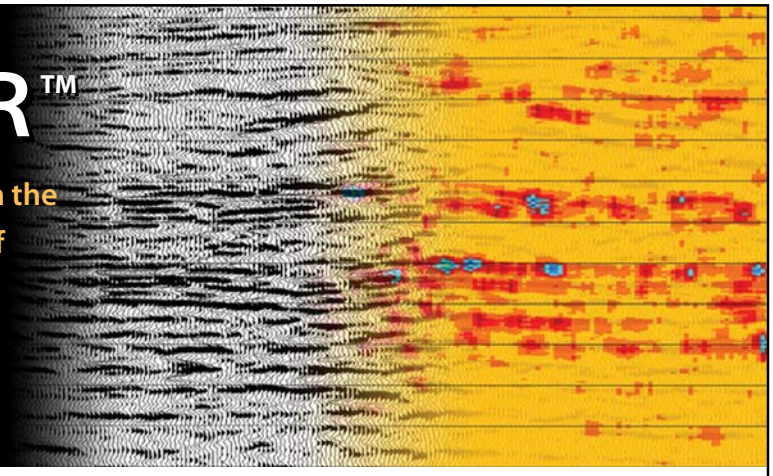
PLATE IV Solar flare emitted from the cluster of sunspots. Picture was taken by NASA at 6:56 A.M., October 26, 2014.

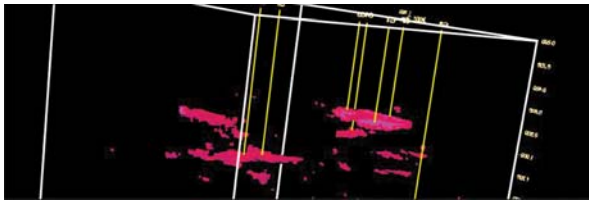
continued on page 28

DRILL SMARTER™

Proprietary Post-Stack Technologies to Aid in the Analysis of Seismic Data and Identification of Direct Hydrocarbon Indicators

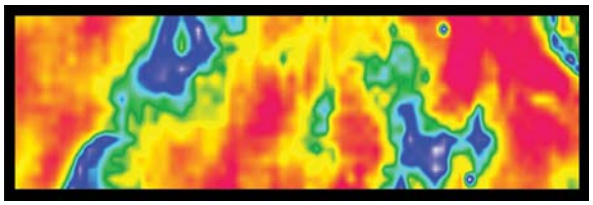
Reduce risk • Increase exploration success
Stay ahead of the competition • Improve your ROI





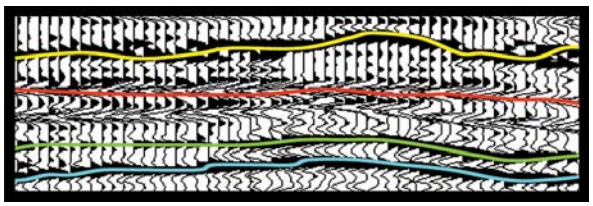
EnergyAbsorption℠

Measures high frequency absorption indicating the location of increased porosity and potential gas accumulations



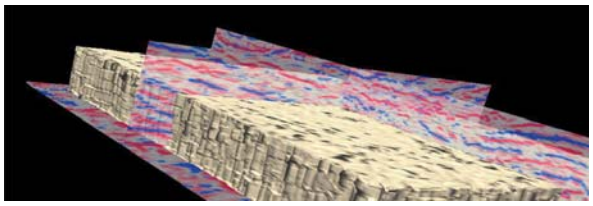
SpecView℠

Spectral Decomposition identifying hidden stratigraphic information and subtle anomalies within a specific horizon



HiRes℠

Recovers detail lost in the standard seismic response



SemCube℠

Measures a semblance response indicating faulting, fracturing and other anomalous areas

SeismicVentures®

For more information, contact Sara Davis at **s_davis@seismicventures.com** or **(281) 240-1234 x206**

Seismic Ventures, Inc. • 12603 Southwest Freeway, Suite 600 • Stafford, Texas 77477
t: 281-240-1234 • f: 281-240-4997 • www.seismicventures.com

material catch up with the slower moving. Solar winds reach a speed of about 250 miles per second by the time they reach the outer limits of Earth's magnetic field. Strength of this solar wind will vary as the sun rotates, and this variation will increase during time the sun changes poles.

The writer of the paper from which PLATE II was taken describes the waves of energy leaving the sun as being similar to waves produced by a waving sheet. The waves emanate from the sun continuously in large bands of energy. Strength of the bands of lower and higher energy is not known, but it is reasonable to assume that if Earth were to pass through one of the bands of high energy for an extended period, weather on Earth would be warmer than usual. Should Earth spend longer than normal time within a band of lower energy; Earth would probably be cooler than normal.

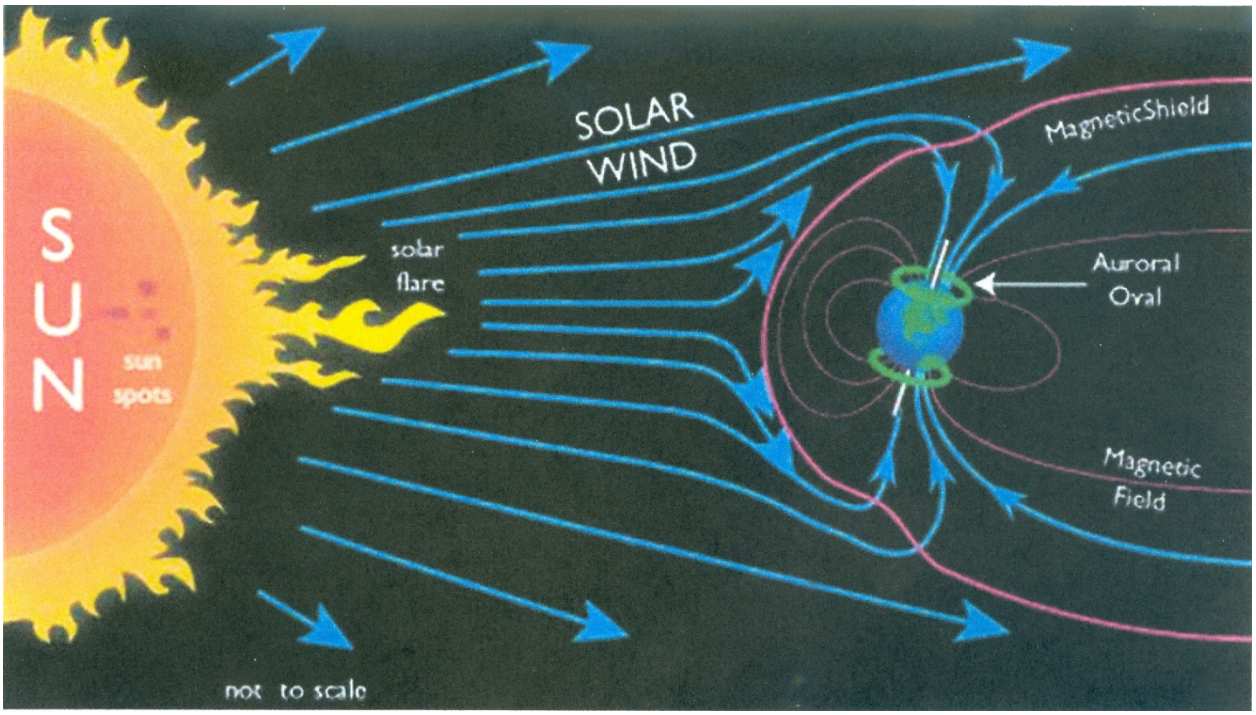


PLATE V Artist's conception of Solar Wind and Earth's magnetic field for NASA

Earth has its own magnetic field, also known as the geomagnetic field, or magnetosphere, which helps protect Earth from solar winds and coronal mass ejections generated on the sun. Within Earth's magnetic field are two belts of concentrated high-energy electrons known as the inner Van Allen Radiation Belt and outer Van Allen Radiation Belt. The Van Allen Radiation Belts extend from about 400 to 40,000 miles above Earth. NASA's Van Allen probes spacecraft has shown that the high-energy electrons in the inner radiation belt display a persistent pattern resembling slanted zebra stripes. NASA scientists have concluded this pattern of electrons is caused by the slow rotation of the Earth. These high-energy electrons in the inner radiation belt have velocities approaching the speed of light, 186,000 miles per second.

continued on page 30

SPONSORS

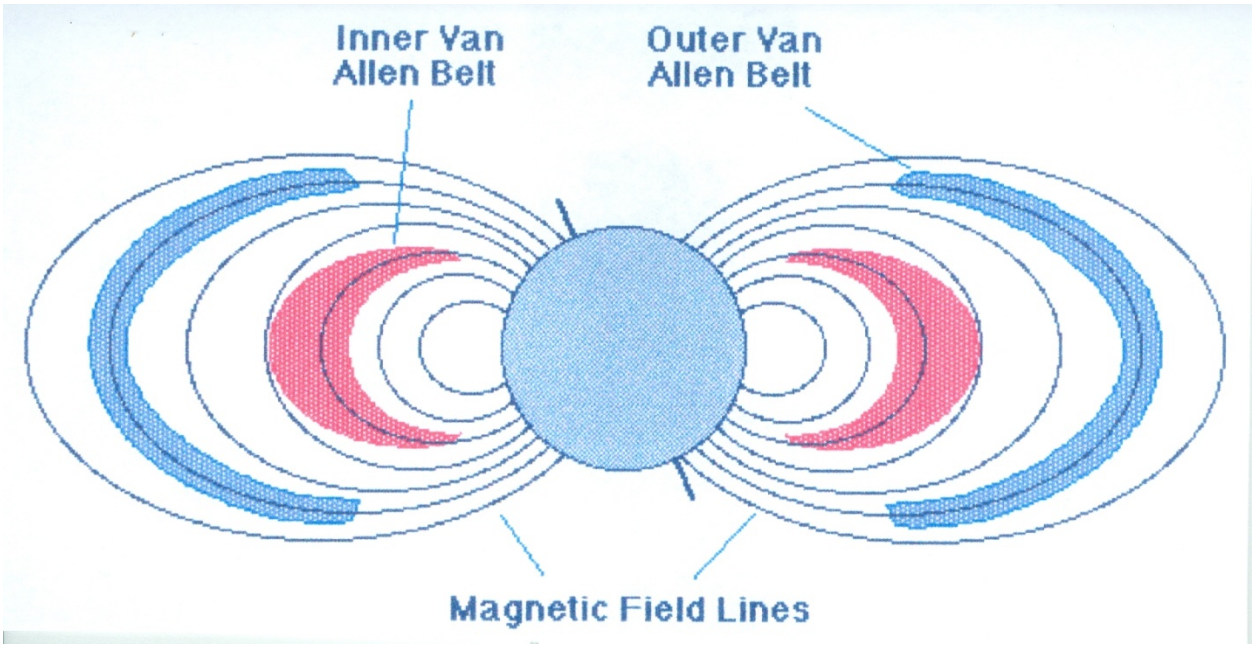


PLATE VI Drawing of the inner and outer Van Allen Radiation Belts for NASA.

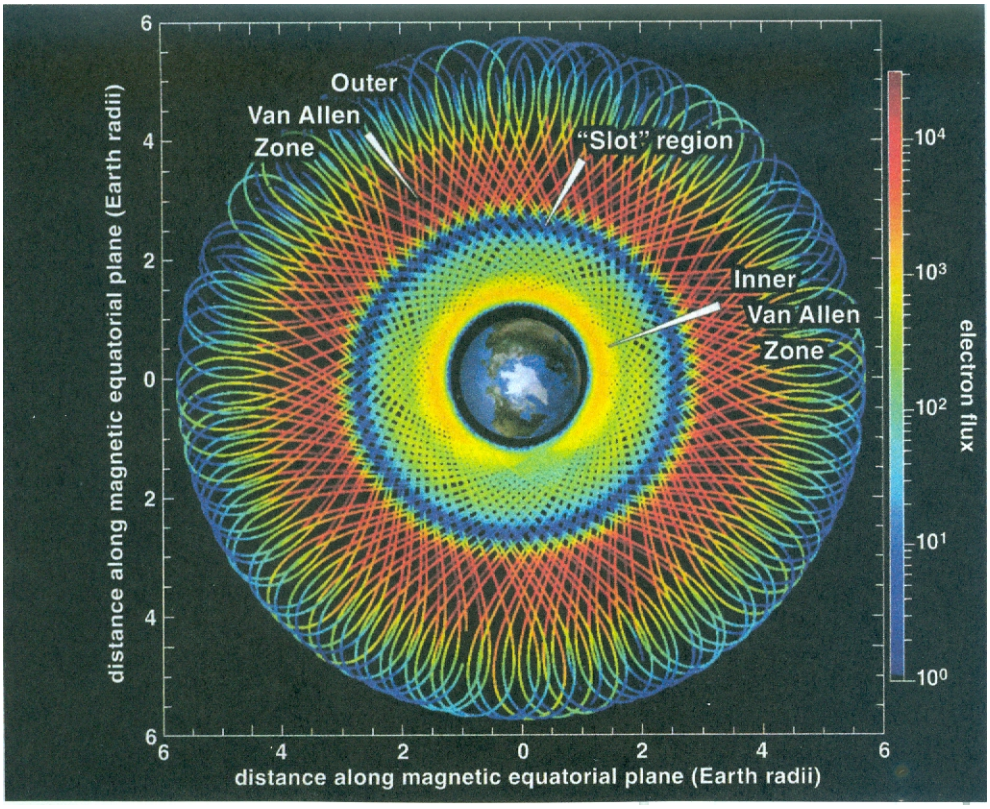


PLATE VII A more recent depiction of Earth's Van Allen Radiation Belts from, "New Twist in Earth's Radiation Belts," by Daniel N. Baker, American Scientist, Volume 102, September-October, 2014, pp. 374-381.

continued on page 32

SPONSORS

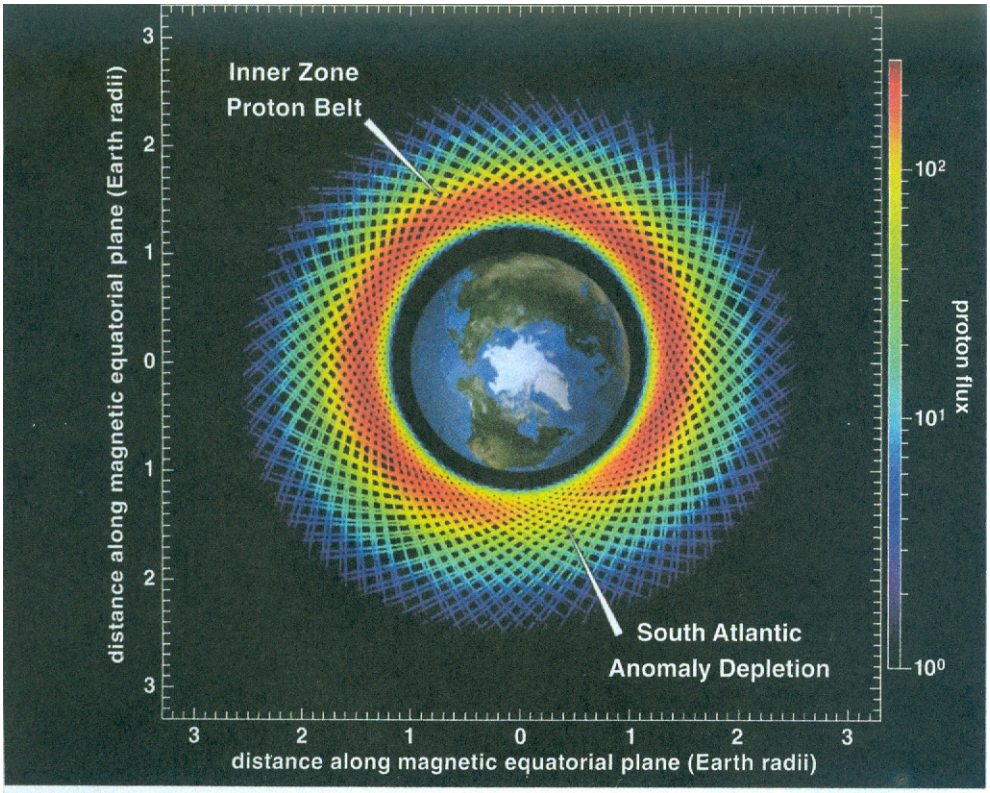
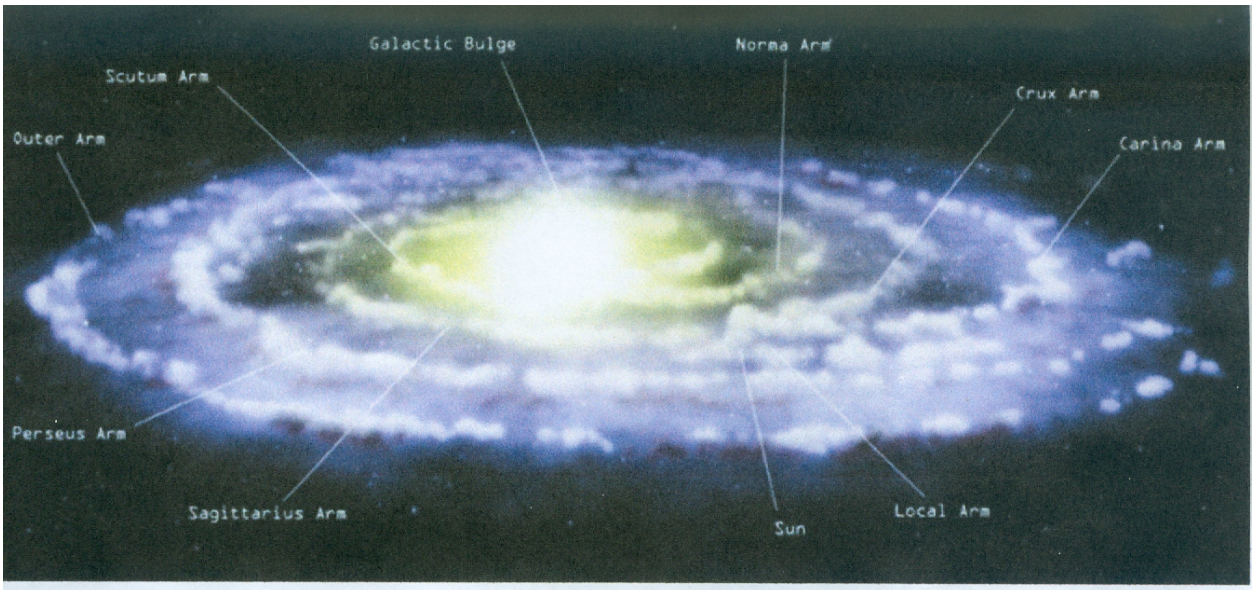


PLATE VIII Same reference as immediately above.



An Artist's illustration of the Milky Way Galaxy

Image credit: NASA / CXC / M. Weiss

PLATE IX

7

continued on page 34

SPONSORS

NASA launched a spacecraft on August 30, 2012 to study the Van Allen Radiation Belts. The sun emitted a long, powerful solar flare toward earth on August 31, 2012. Instruments on the newly launched spacecraft recorded freshly accelerated particles trapped in the Van Allen Belts on September 1, 2012. Instruments on the space probe detected a third belt between the inner and outer Van Allen Radiation Belts. Scientist referred to this intermediate belt as the, "Storage ring," or the, "Slot region." This intermediate ring appears to develop and disappear rapidly and is not always present. The Van Allen Radiation Belts, the rest of Earth's magnetic field, and Earth's atmosphere, protect Earth from the sun's solar winds and coronal mass ejections, cosmic rays and other radiation from space. The surface of Earth would be scorched by the sun's radiation without Earth's magnetic field. Earth's magnetic field deflects energy from the sun around the earth, preventing much of this energy from entering Earth's atmosphere. Protection from sun's radiation can be expected to weaken as Earth's magnetic poles continue to move, in this writer's opinion. This weakening probably will only effect space communication and not human activity on the surface of Earth.

Diameter of Earth at the equator is 7,926 miles and the polar diameter is 7900 miles, a difference of 26 miles. Earth rotates on its geographic axis once every 24 hours. If an individual stands still at the equator, they would be moving at about 1,000 miles per hour with this rotation. Earth completes one rotation in its orbit around the sun in 365 days and 360 minutes. The 360 minutes is the reason for leap year every four years. Leap year lets the calendar catch up with Earth's position relative to that of the rest of the solar system. Earth is about 93 million miles from the sun and moves at about 66,000 miles per hour as it rotates around the sun. The sun is one of several hundred billion stars that make up the Milky Way Galaxy. In addition to the Milky Way Galaxy moving through space, stars in the Galaxy, including the sun and our Solar System, rotate around a central point in the galaxy, similar to the way Earth rotates around the sun. It takes the sun, and the rest of the solar system, about 225 million years to complete an orbit within the Milky Way Galaxy. To complete this orbit requires the sun to move at about 43,000 miles per hour. Remember, Earth is moving with the sun as part of the Solar System. The entire Milky Way Galaxy is spinning about some central point in space. The Milky Way Galaxy appears to be moving through space at about 483,000 miles per hour. This means Earth and its occupants are constantly moving at about 593,000 miles per hour, assuming they are standing still at the equator. This movement is not felt because Earth's atmosphere also moves.

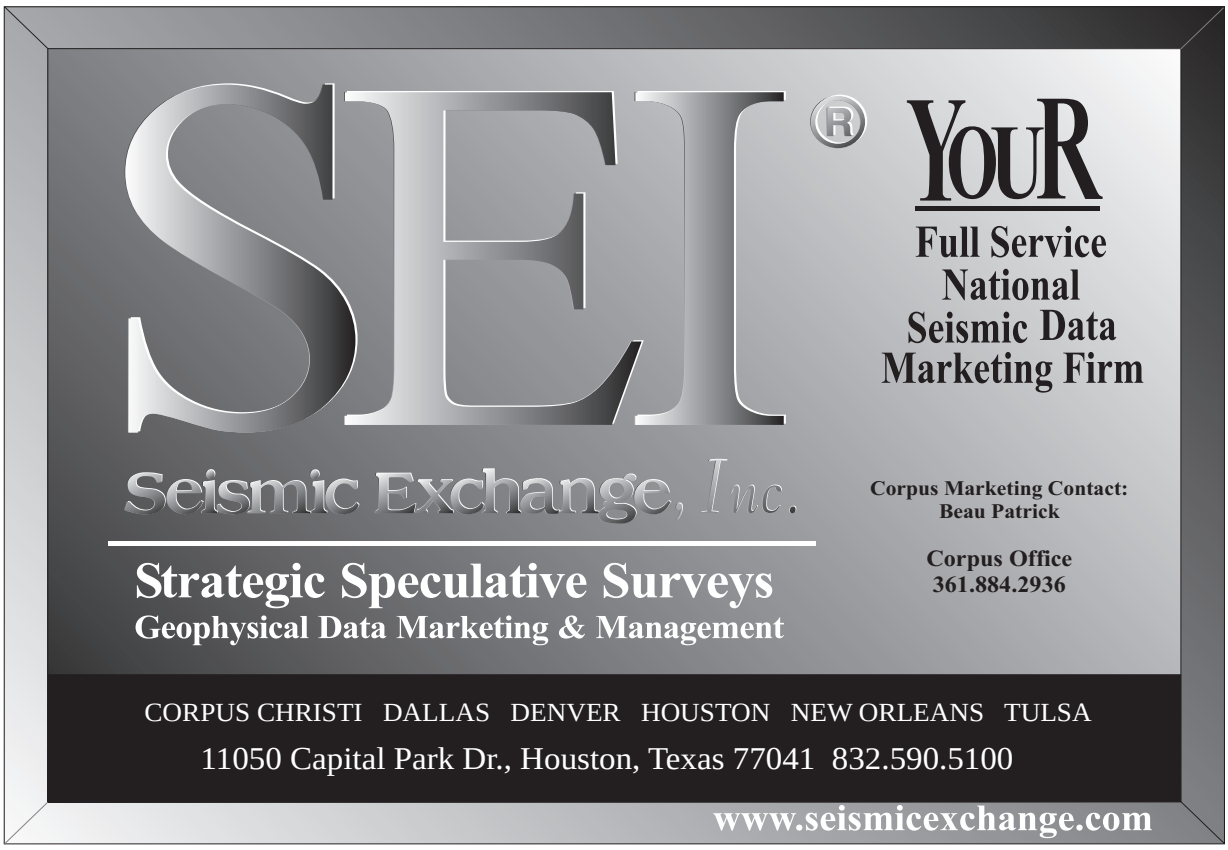
Movement of the north and south magnetic poles provides evidence that a reversal of the poles is probably eminent, and may be taking place. Movement of the two magnetic poles is not synchronous. Earth's magnetic field is generated from spinning liquid molten iron in the outer core encapsulating a solid iron inner core. Somehow, interaction between Earth's inner core and outer core is probably changing to cause movement of the poles at Earth's surface. Complete reversal of Earth's magnetic poles may take from one thousand to several thousand years. The last pole flip took about 100 years to complete. Based on movement of the magnetic North Pole, this writer thinks it will take much longer than 100 years to complete the current pole flip.

It is possible to get an idea of the difference in movement of the magnetic north and south poles by comparing the amount of movement over a long time span. The North Pole has moved about 50 degrees west and about 2 degrees north, or about 3,400 miles northwest from 1600 to 2014. The South Pole has moved about 30 degrees west and about 2 degrees north, or about 1,800

continued on page 36

SPONSORS


VirTex Operating Company, Inc.
615 North Upper Broadway, Suite 525, Corpus Christi, Texas 78477
(361) 882-3046


SEI®
Seismic Exchange, Inc.
YOUR
Full Service
National
Seismic Data
Marketing Firm
Corpus Marketing Contact:
Beau Patrick
Corpus Office
361.884.2936
Strategic Speculative Surveys
Geophysical Data Marketing & Management
CORPUS CHRISTI DALLAS DENVER HOUSTON NEW ORLEANS TULSA
11050 Capital Park Dr., Houston, Texas 77041 832.590.5100
www.seismicexchange.com

miles northwest from 1600 to 2014. The North Pole has moved about 1.9 times farther northwest than the South Pole from 1600 to 2014. The North Pole moved about 3,070 miles west from 1900 to 2014, while the South Pole moved about 1350 miles west, about 2.27 times as far. From 1600 to 1900, the North Pole moved about 663 miles north and the South Pole about 455 miles north, only about 1.5 times as far. One fact that indicates the poles may be changing is the two poles are moving in the same direction. Another is the distance the North Pole has moved in the last few years. The South Pole moved about 100 miles north from 1995 to 2014 and the North Pole moved about 1900 miles west northwest in that time. The magnetic North Pole is moving closer to the Geographic North Pole, now about 400 miles and the magnetic South Pole is moving away from the Geographic South Pole, now about 1800 miles. The Magnetic South Pole is in the Eastern Hemisphere and the Magnetic North Pole is now in the Western Hemisphere. The Magnetic North Pole will be in the Eastern Hemisphere in about fifteen years if it continues to move west at the rate of the last seven years. The fact Earth's magnetic field is weakening is another reason to expect a pole flip is in progress. Recent data indicate Earth's magnetic field has weakened about 10% since 1845. A few years earlier, scientists thought Earth's magnetic field was weakening about 5% per century, now they think it is weakening about 5% every ten years. This weakening is not constant over the entire planet. Remember, sun's magnetic field also weakened prior to its pole flip. Earth's magnetic poles historically flip every 200,000 to 400,000 years and it has been about 780,000 years since the last flip, so Earth is overdue. Reversals are not predictable or periodical, so there are only average intervals.

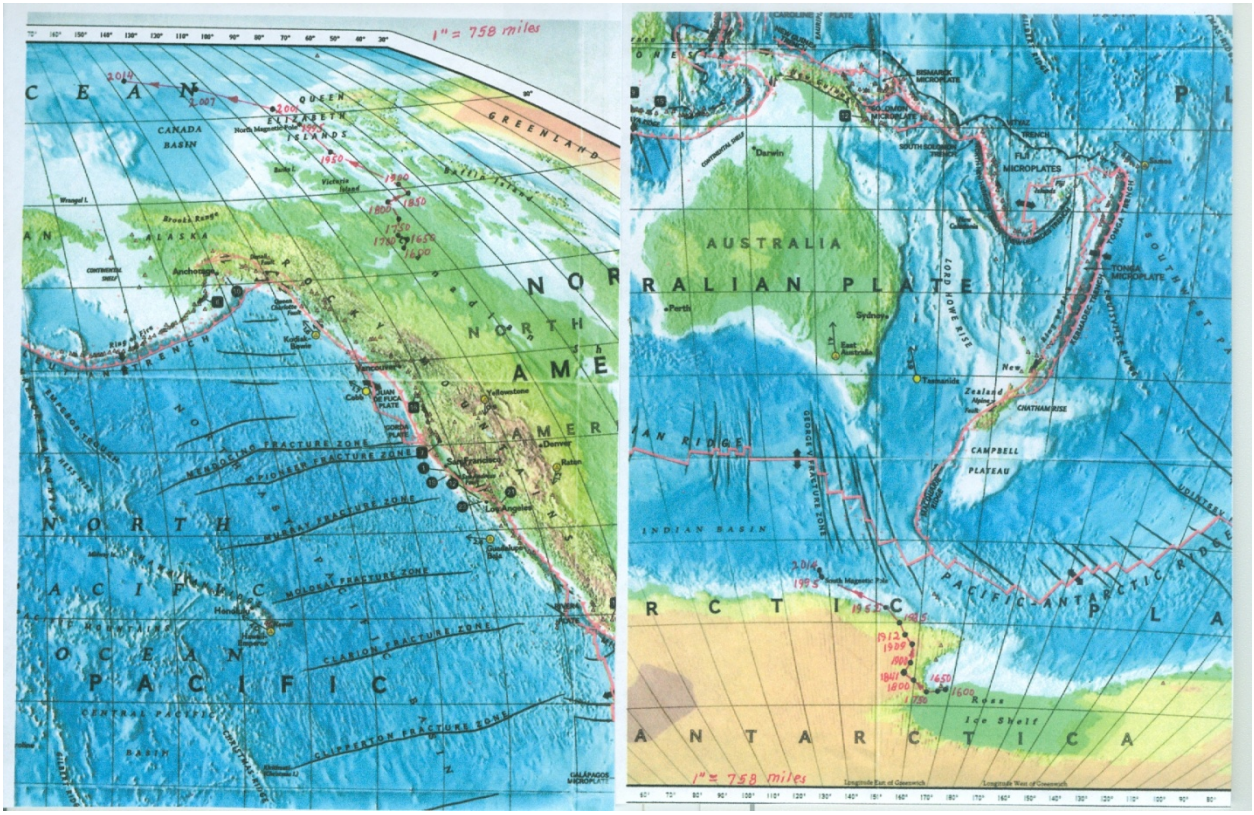


PLATE X These pictures shows movement of the north and south poles side by side so the movement of each magnetic pole may be compared.

continued on page 37

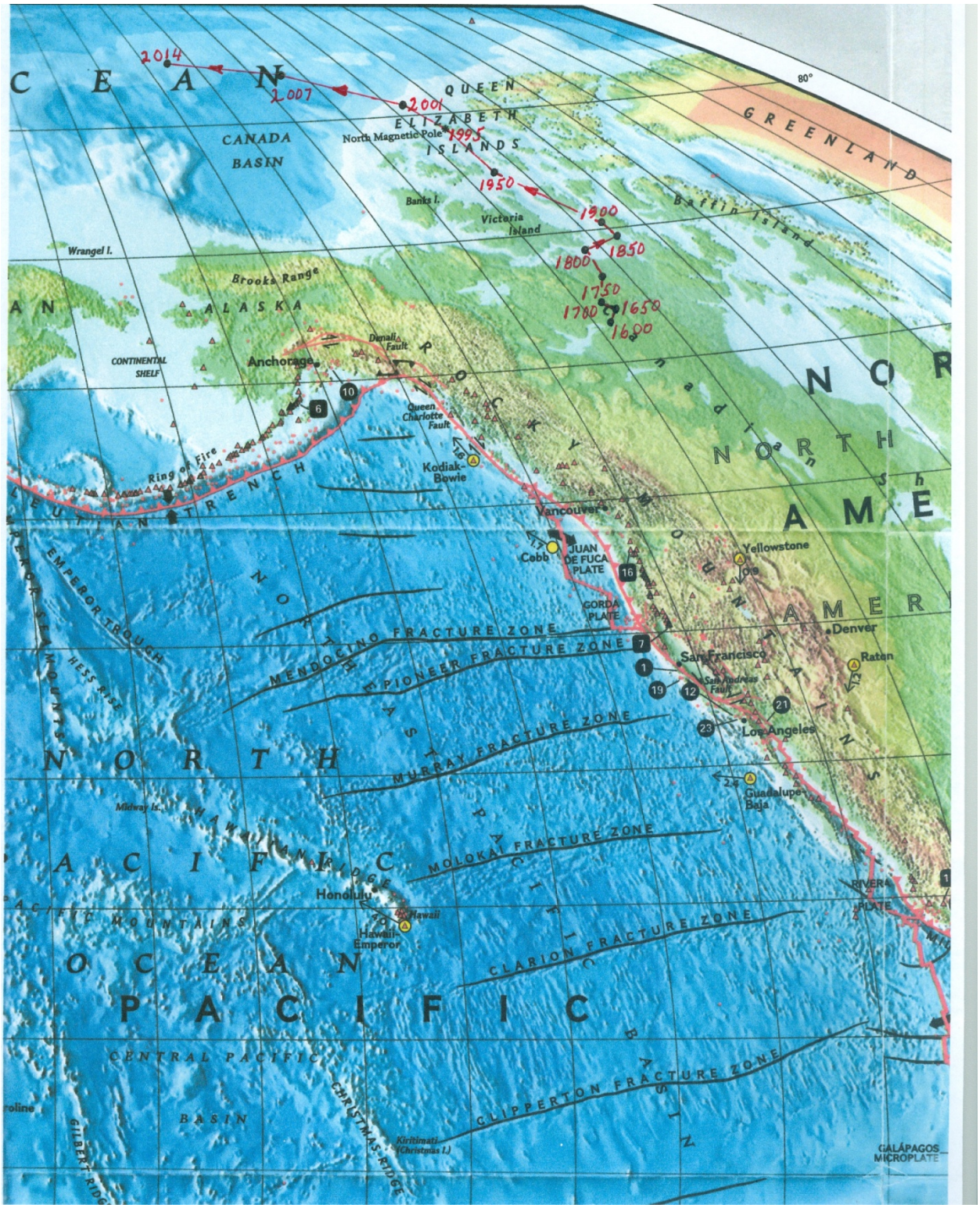


PLATE XI Plot of movement of the North Magnetic Pole

10

continued on page 38

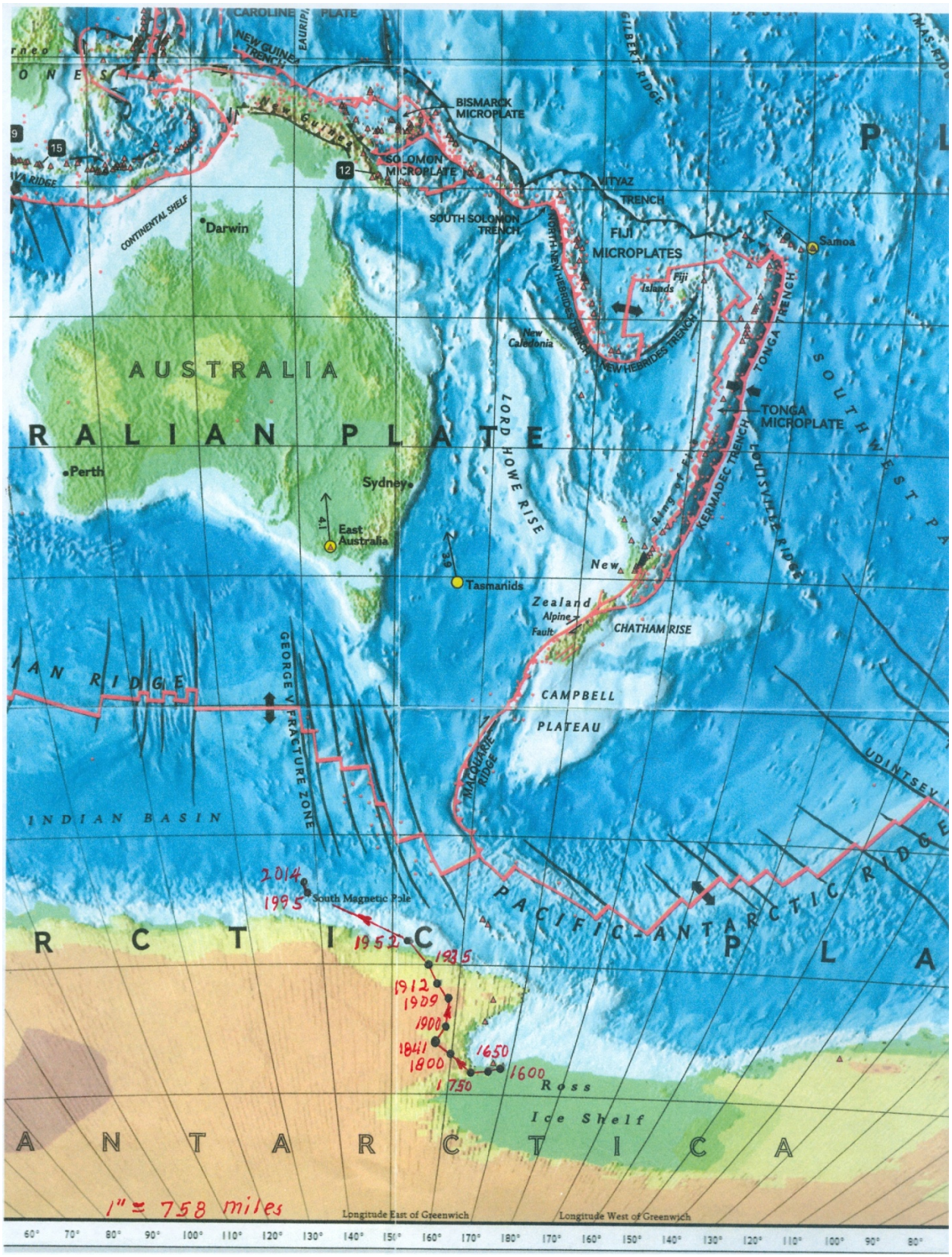


PLATE XII Plot of movement of the South Magnetic Pole

11

continued on page 39

Homo sapiens have been on Earth only about 200,000 years; so no humans have experienced a pole flip. The geologic record does not show any dramatic changes due to the pole flip. The world has experienced some severe droughts in recent history, but nothing that would be considered catastrophic. What is referred to as the, "Medieval drought," between about 1200 and 1450 A.D., affected Northern Europe and the Western Hemisphere. Records for Africa and Asia are not available, so it is not known if they were affected. Indian tribes in the northern and southern hemisphere abandoned their homes during this drought, and study of tree rings and other data indicate drought was the major reason. Mesa Verde, in Southwestern Colorado and Canyon de Chelly, in northeastern Arizona are two areas that show the native populations migrated out of the area because of a drought, but there are many others in the Southwest and some in South America that were abandoned about the same time. This drought appears to have started about 1200 A. D., and by about 1500 A. D., many of the native Indian tribes had migrated elsewhere, where there was more water. Europeans had no place to migrate and were forced to endure the drought. You may recall Europeans began seriously exploring the Western Hemisphere about this same time. Columbus sailed in 1492, but others preceded him. The 1930's drought in the United States was bad, but not as wide spread as the medieval drought.

Ocean currents are an important factor in Earth's weather. There is only one ocean. Different parts of this one ocean have different names. About 71% of Earth is covered by water. Seas and oceans, with an average depth of 12,450 feet hold 96.5% of all Earth's water. The rest of Earth's water is in rivers; lakes; ice caps, glaciers, and permanent snow; in the ground as soil moisture and aquifers; in the atmosphere; and in living things. Two and one-half percent of Earth's water is fresh water at any one time and about three-fourths of this is in the more or less permanently frozen ice and snow. The 29% of Earth's land surface has an average altitude of 2,755 feet. With almost two and one half times as much ocean surface as land surface, it is easy to see why the oceans play an important part in the weather.

There are both warm ocean currents and cool ocean currents. The cool currents originate at Earth's poles due to receiving much less sun light and the poles radiate away more heat than they receive. Warm currents originate near the equator where more sunlight is received and less heat is radiated away. Ocean currents and winds carry heat away from the tropics and toward the poles. In summer land is warmer than the nearby oceans, and heat is carried from the land to the oceans. Oceans are warmer during winters and heat is carried from oceans to the land. Remember summers and winters occur opposite each other in the southern and northern hemisphere.

Oceans help distribute water and heat around the world, transporting warm water and precipitation from the equator toward the poles and cold water back toward the equator. Ocean currents are created by surface winds (partly due to Earth's rotation), tides (caused by the gravitational effects of the sun and moon), and by temperature and salinity gradients of the oceans. Oceans absorb about 98% of the suns radiation due to the fact oceans cover most of Earth and water more easily absorbs radiation than does land.

continued on page 40

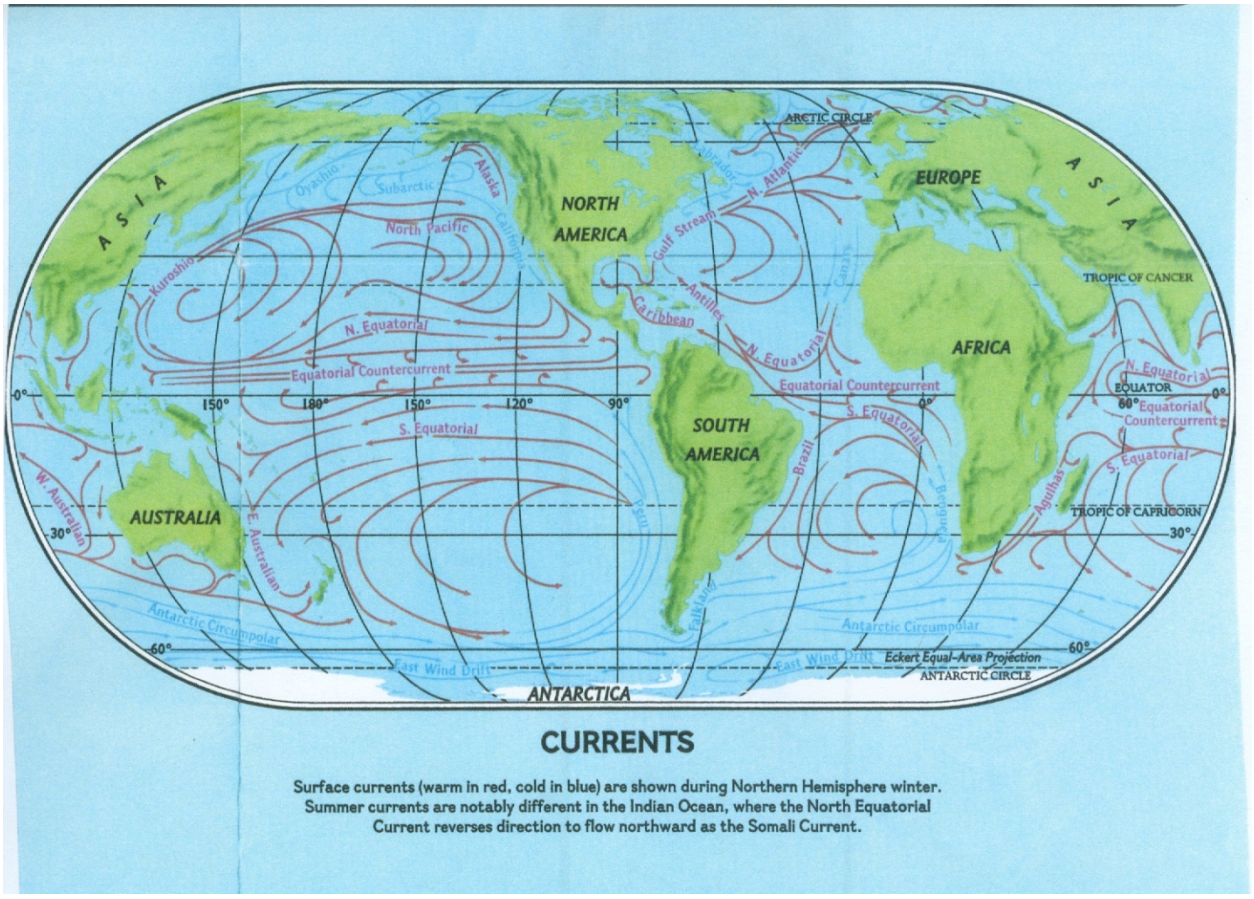


PLATE XIII Diagram of Earth's Ocean currents from National Geographic map, "THE WORLD,"
National Geographic Society, February 1994

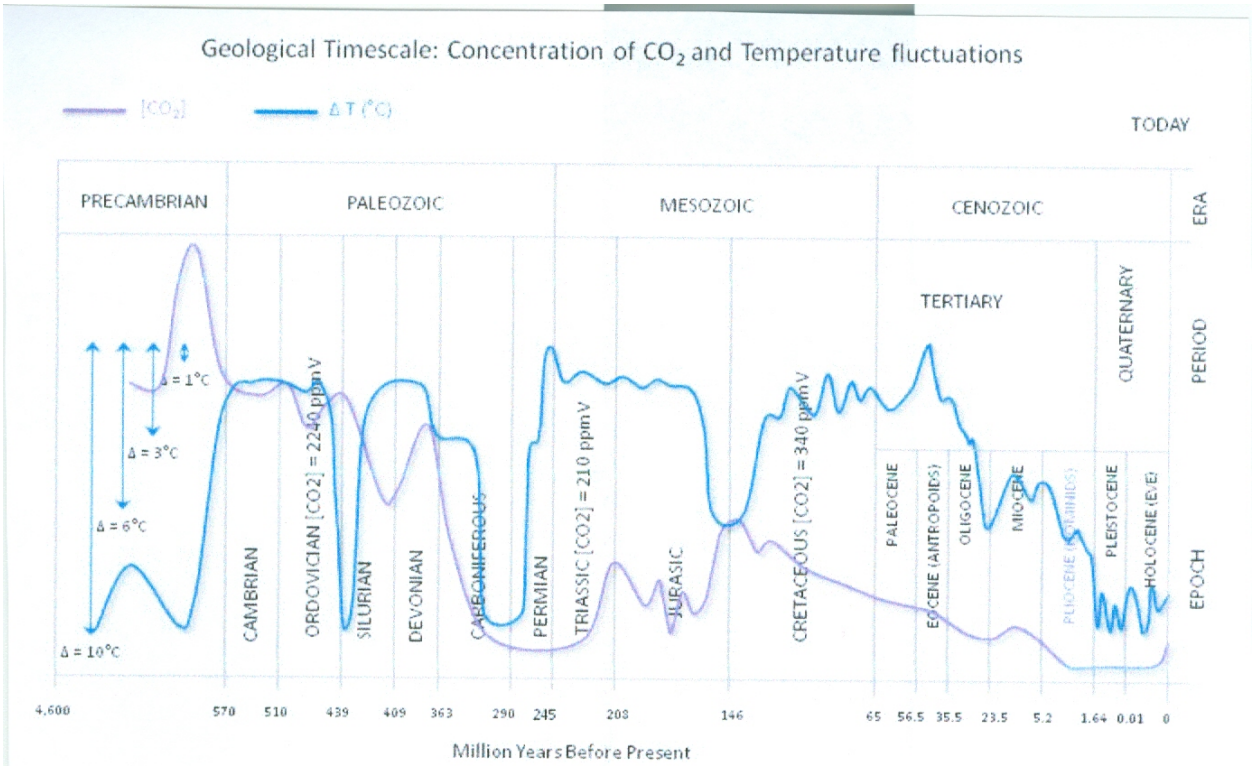
There is some evidence the ocean circulating system that brings cool water from ocean depths to the surface along the equator has been slowing since the mid-1970's. This has caused sea surface temperatures to rise about 1.4 degrees Fahrenheit along the equator. There are some who think slowing of the ocean currents system contributed to the last ice age. This writer thinks changes in ocean currents, changes in Earth's atmosphere and Earth's position relative to the sun and other planets probably all contributed to formation of the last Ice Age. Greenland glaciers are thinning while ice around Antarctica is increasing. This writer thinks this is another result of movement of Earth's magnetic Poles.

Oceans contain about 50 times more carbon than the atmosphere. Atmospheric carbon is in the form of carbon dioxide. About one-half of atmospheric Carbon Dioxide is absorbed by the oceans. Much of this carbon is stored in very small marine organisms called phytoplankton. Phytoplankton are responsible for about 50% of photosynthesis on the planet. Photosynthesis is the process of converting carbon dioxide and water into carbohydrates, releasing oxygen. As phytoplankton, and the animals that eat them, die and sink to the ocean bottom, they take the carbon with them. This is part of the process of forming coal, oil and natural gas deposits. Large

continued on page 41

amounts of carbon dioxide and methane are brought to the surface near Antarctica and these volumes appear to have increased as Earth comes out of the last Ice Age.

Volcanoes are a major source of carbon dioxide, sulfur, and other gases in the atmosphere. There are about 1500 active volcanoes on Earth. About 500 of these have erupted in historical times and 50 to 70 erupt each year. The amount of gases released to the atmosphere by each eruption varies. Ash from the explosion of Mt. St. Helens in Washington State, which erupted May 18, 1980, took about one year to circle the earth. It is reasonable to assume the accompanying gases were also present and were more widely dispersed than the ash.



1- *Analysis of the Temperature Oscillations in Geological Eras* by Dr. C. R. Scotese © 2002. 2- Ruddiman, W. F. 2001. *Earth's Climate: past and future*. W. H. Freeman & Sons. New York, NY. 3- Mark Pagani *et all*. *Marked Decline in Atmospheric Carbon Dioxide Concentrations During the Paleocene*. Science: Vol. 309, No. 5734: pp. 600-603. 22 July 2005. *Conclusion and Interpretation* by Nasif Nahle ©2005, 2007. *Corrected on 07 July 2008 (CO2: Ordovician Period).*

PLATE XIV A diagram showing how temperature and concentration of carbon dioxide have varied on Earth. Dr. Scotese has been a professor at University of Texas Arlington and The University of Texas Austin, among other positions.

The blue line in PLATE XIV represents global temperature changes and the purple line represents changes in atmospheric carbon dioxide. Temperature range for the above graph is from about 12 (53.6 F) to 22 (71.6 F) degrees Celsius, a variation of ten degrees Celsius (18 degrees Fahrenheit). Based on ice cores from the Antarctica (PLATE XV), global temperatures have varied about ten degrees Celsius (18 degrees Fahrenheit) from minus 8 to plus 2 degrees Celsius over the last 425,000 years. That variation is roughly what is shown on PLATE IV.

continued on page 42

Probably the most important thing shown on Dr. Scotese's graph is that there is a lot more of the blue line above the level shown for the Quaternary Period than below it AND Earth has been cooler than normal since Homo Sapiens have been here. Another graph showing oxygen isotope levels over the last 5 million years also shows current climatic conditions are below normal, another indication Earth is cooler than normal.

There is some debate as to whether Earth is coming out of the last Ice Age or going into another one. Consensus seem to be that Ice Ages are caused by wobbling of Earth's orbit, but nothing has been found telling what causes changes in Earth's orbit or changes in tilt of Earth's rotational axis. This writer gave a paper several years ago on that subject while a graduate student at The University of Oklahoma. Not only are there changes in Earth's orbit around the sun, but there are changes in the tilt of Earth's rotational axis. Both of these changes alter Earth's normal weather. In that early paper, this writer tried unsuccessfully to place blame for altering of Earth's orbit and changes in Earth's rotational axis on alignment of all planets in the sun's solar system.

PLATE XIV shows temperature and carbon dioxide on Earth are at, or near, historical lows. Some of the methods of determining temperatures and carbon dioxide content are ice cores for more recent events, pollen (palynology), carbon 14, radioactivity, oxygen isotopes, and volcanic ash. This is not a complete list. Scientists apparently can be reasonable sure of their estimates of temperature and carbon dioxide in early history of Earth, but some charts on historical carbon dioxide and temperature show large areas of uncertainty.

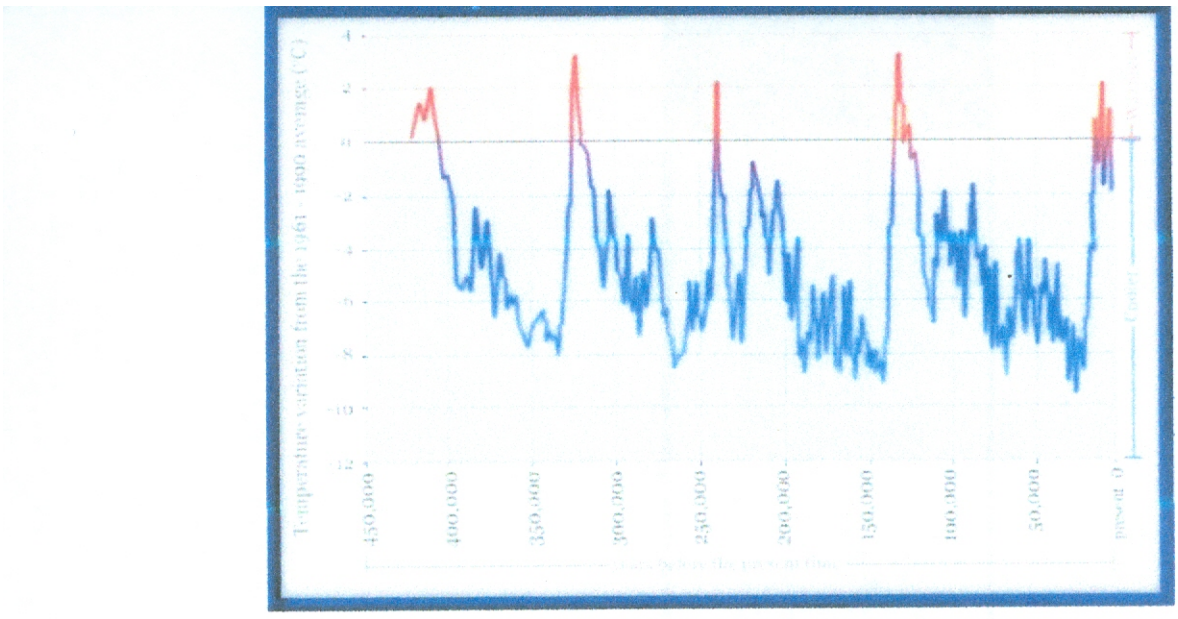


Figure 1. Global temperatures measured from the Antarctic ice showing stable, cyclic chaos and self-similarity.

PLATE XV This graph shows average global temperatures have been about ten degrees below historical levels over the last 425,000 years. It shows peaks in the maximum high temperature

continued on page 43

and low temperatures may be cyclic. The current Ice Age may or may not be over. The graph shows Earth started accumulating ice about 425,000 years ago and warmed for about 8,000 years before cooling for about 80,000 years, and then started to warm again. This cycle has continued to the present. PLATE XV indicates Earth is not out of the Ice Age and Earth can expect to get cooler. Other indicators point to Earth getting warmer.

The following paragraph is from a July 26, 2009 Internet article by Abby Cessna entitled, "Orbits of the Planets." Pluto is now considered a dwarf planet, so there are only eight planets in our solar system. The closest point to the sun for a planet is referred to as the perihelion and the farthest point the aphelion. Eccentricity of an orbit is a measurement of how much the orbit varies from a circle.

Mercury is the planet closest to the sun. Mass of the planets is 10 to the 21 kilograms, (10,000,000,000,000,000,000,000), or 2.20462 pounds with the same number of zeros or more. There is quite a bit of variation for this number. Mass is the amount of matter in an object. The more mass an object has, the more it will weigh in a gravitational field. Mercury has a mass of 33, an eccentricity of 0.21, a perihelion of 28.6 million miles, an aphelion of 43.5 million miles, and takes about 88 Earth days to orbit the sun. Venus has a mass of 487, an eccentricity of 0.007, a perihelion of 66.5 million miles and an aphelion of 67.7 million miles. It takes Venus about 224.7 Earth days to orbit the sun. Earth has a mass of 597.6, an eccentricity of .017, a perihelion of 91.3 million miles, an aphelion of 93.2 million miles, and takes 365.256 days to orbit the sun. Mars has a mass of 64.21, an eccentricity of 0.093, a perihelion of 128.6 million miles, an aphelion of 154.7 million miles, and takes 687 Earth days to orbit the sun. Jupiter has a mass of 190,000 (more than all the other planets combined), an eccentricity of 0.048, a perihelion of 460.4 million miles, an aphelion of 483.4 million miles, and takes 11.86 Earth years to orbit the sun. Saturn has a mass of 56,880, an eccentricity of 0.056, a perihelion of 0.84 billion miles, an aphelion of 0.94 billion miles, and takes 29.7 Earth years to orbit the sun. Uranus has a mass of 8,686, an eccentricity of 0.047, a perihelion of 1.7 billion miles, an aphelion of 1.86 billion miles, and takes 84.3 Earth years to orbit the sun. Neptune has a mass of 10,240, an eccentricity of 0.009, a perihelion of 2.76 billion miles, an aphelion of 2.82 billion miles and takes 164.79 Earth years to orbit the sun.

This paragraph dealing with Earth's orbit and tilt of Earth's rotational axis is from an Internet article by Bryan Nelson dated May 25, 2012. Tilt of Earth's rotational axis varies from 22.1 to 24.5 degrees and is currently about 23.5 degrees. This tilt is what causes seasons on Earth. During summer in the northern hemisphere, the northern hemisphere is nearer the sun and the southern hemisphere is farther from the sun due to this tilt as Earth rotates around the sun. The reverse is true during winter in the northern hemisphere the northern hemisphere is farther from the sun and the southern hemisphere closer to the sun. If tilt of the Earth's rotational axis is less than normal, summers and will be cooler than normal and winters warmer. If tilt of the rotational axis is greater than normal, winters will be colder than normal and summers hotter than normal. The angle at which Earth tilts varies according to a 40,000 year cycle. With the current tilt about 23.5 degrees Earth should now be in a moderate weather cycle.

This writer believes it is reasonable to assume planets in our solar system can affect Earth. If all eight planets are on the same side of the sun at any one time, it should be expected that

continued on page 44

gravitational pull would tend to pull more than a normal amount of material from the surface of the sun. If that happens, Earth should be warmer for some period of time. Since Jupiter is larger than all other planets combined, when it is near Earth, it could be expected to exert some pressure to pull Earth away from its normal orbit. Although Mars is the second smallest planet, its orbit is much nearer that of Earth and when it passes between Earth and Jupiter that could increase chances of causing Earth's orbit to move a small distance farther from the sun. Saturn is

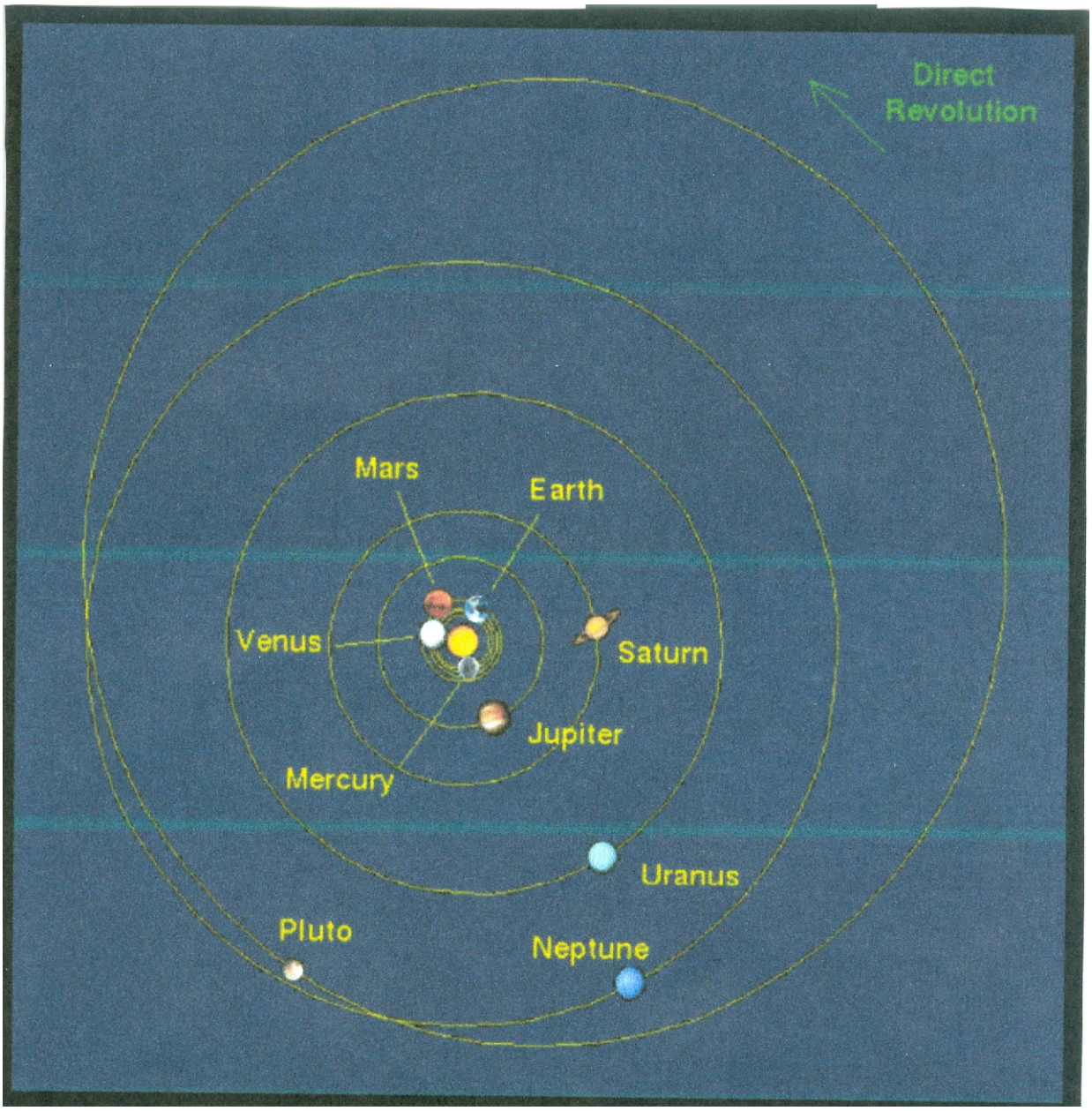


PLATE XV A diagram of planets in the solar system taken from the Internet. The diagram is used to show the orbital eccentricity of the various planets.

The second largest planet, and when it lines up on the same side of the sun with Earth, Mars and Jupiter, more pressure should be exerted to move Earth's orbit away from the sun. It apparently

continued on page 45

does not take much movement away from the sun to create conditions in which an ice age can form. If normal snowfall is not allowed to melt during summers, enough snow and ice can accumulate over several years to create a glacier. Cooler temperatures allow the snow and ice to accumulate and then the snow and ice tend to reflect heat from the sun, which adds to the accumulation of more snow and ice. Once conditions allow snow and ice to start accumulating, the process tends to build on itself until warming returns to end the process.

Population of the world continues to expand each year. It is estimated one billion people were on Earth in 1804. It took 123 years to double that population to two billion in 1927. Population of the world reached three billion 33 years later in 1960 and increased almost constantly to reach six billion in 1999. Population of the world is over 7.25 billion at the end of 2014. Humans contribute to the climate by removing forests and grasslands that absorb CO2 from the atmosphere and release oxygen. Burning fossil fuels release gases into the atmosphere when exhausts are not properly filtered. Anthropogenic waste is probably the largest contributor to the human share of the contribution to Earth's pollution. This consists of all kinds of material discarded by humans. There are islands in the ocean made up of trash discarded by humans. Landfills containing discarded material are all over the world. Millions of gallons of water are used daily to treat human waste in sewer plants around the world. All mammals emit methane gas into the atmosphere. Agricultural runoff from fertilizers and herbicides has created dead zones in the ocean. Over population precipitates all of the human contribution to these conditions. As stated in the earlier article, water is the most critical item in the population problem. Fresh water is a very precious commodity. If excess water is removed from oceans in desalinization projects, balance of life in oceans will be permanently and detrimentally disturbed. Corpus Christi Bay is an example of this. The city of Corpus Christi is required to release fresh water from upstream lakes into the bay during periods of drought. Drawing large amounts of water from oceans will have the same effect, only much larger. Homo sapiens may be the first species to breed themselves out of existence.

Everything in our universe is connected. What happens on the sun affects what happens on Earth. Movement of the magnetic poles on Earth is going to have some affect on Earth other than changing of the compass needles. Earth's magnetic shield protects Earth from harmful rays from the sun and cosmic rays from outer space. PLATE V illustrates how Earth's magnetic field protects against Solar Winds. Note on the illustration that high-energy particles from the Solar Winds reach Earth at the magnetic poles, coming from both directions, toward the sun and away from the sun. These high-energy particles undoubtedly will not be as strong as those that might hit Earth directly, but will have some affect. Only time will tell what happens when Magnetic Poles on Earth switch, but it appears that process has started.

Waves of the sun's heliosphere become more uneven when magnetic poles of the sun change. A similar change may be expected as Earth's magnetic poles change. Changing of Earth's magnetic poles is probably what is causing the South Atlantic Anomaly Depletion in the Inner Van Allen Radiation Belt shown in Plate VIII. The author of the article from which this plate was taken states the South Atlantic Anomaly Depletion is a result of tipped magnetic poles of Earth. This writer thinks the anomaly is due to changing of Earth's magnetic poles and more variations in both Van Allen Radiation Belts can be expected. Since the Van Allen Radiation Belts help protect Earth from Solar Winds, changes can be expected on Earth. Earth is expected

continued on page 46

to get warmer as portions of the Van Allen Radiation Belts are depleted. This depletion may be temporary, lasting a few months, or it may be extended over several years. The depletion may expand or contract as the magnetic poles move.

Earth will probably continue to get a little warmer. Earth is still coming out of the last Ice Age and that will cause continued warming. The magnetic Poles are in the process of changing. This movement will cause alterations in the Van Allen Radiation Belts, which protect Earth from Sun's radiation. This warming will alter Ocean currents, which will also contribute to a warmer Earth. Excessive human population may cause warming on Earth, without any of the natural occurring events that are taking place, and that is something that should be controlled. There is no evidence in the geologic record to cause expectation of any drastic changes in weather on Earth due to changing of magnetic poles, but Earth has not held over 7 billion people when magnetic poles flipped before. If anyone is interested in reducing anthropological influences on Earth's climate, the place to start is trying to reduce the rapid population increase. Earth's climate is going to change and people on Earth should prepare for changes as much as possible before they arrive. History of Earth has shown it continuously changed since it was formed and there is no reason to expect it to quit changing. If every human on Earth dropped dead tomorrow, climate on Earth would continue to change, just as it has since Earth was formed about 5 billion years ago.

Ray Govett, Ph. D.
Petroleum Consultant
January 15, 2015

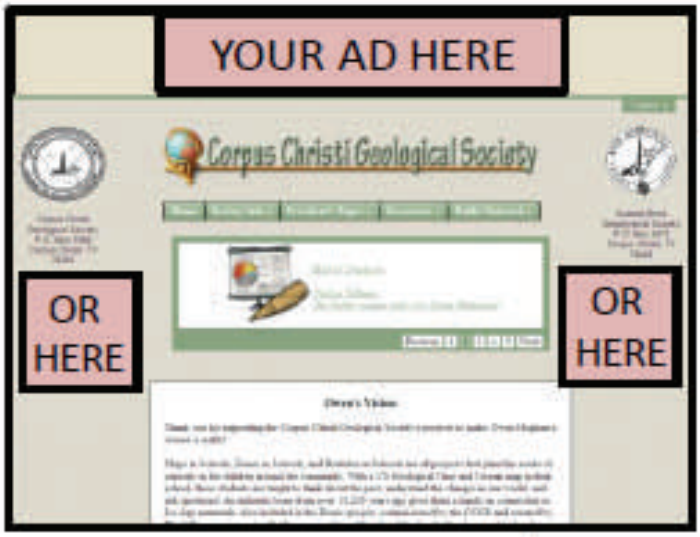
All references, unless otherwise noted, are from Internet articles by employees of The National Aeronautics and Space Administration (NASA).

Opinions are those of the writer.

SUPPORT YOUR SOCIETY

Advertise!!!

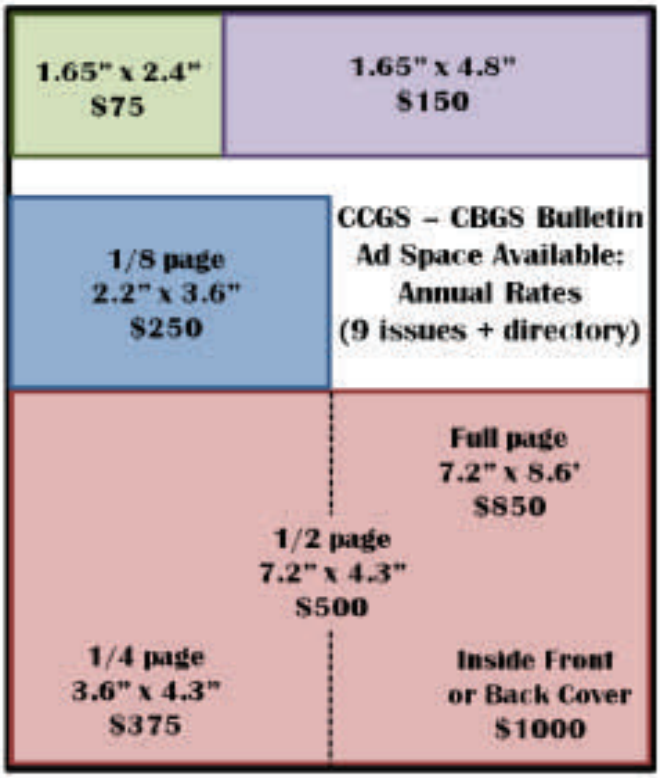
with the CCGS - CBGS



****NOW OFFERING****
WEBSITE ADS @
WWW.CCGEO.ORG

BANNER AD $2500/YR
SIDE PAGE AD $1500/YR

MONTHLY BULLETIN ADS



FOR MORE DETAILS:

EMAIL ADS@CCGEO.ORG OR CALL (361) 887-2691

GEO LINK POST

http://www.lib.utexas.edu/books/landsapes/index.php Free service. Rare, fragile, hard-to-find, public domain documents covering various topics about the landscape of Texas. Includes the Texas Geological Survey from 1887 until 1894.

USGS TAPESTRY OF TIME AND TERRAIN http://tapestry.usgs.gov The CCGS is donating to all of the 5th and 6th grade schools in the Coastal Bend. Check it out--it is a spectacular map. You might want to frame one for your own office. The one in my office has glass and a metal frame, and It cost $400 and it does not look as good as the ones we are giving to the schools.

FREE TEXAS TOPOS'S http://www.tnris.state.tx.us/digital.htm these are TIFF files from your state government that can be downloaded and printed. You can ad them to SMT by converting them first in Globalmapper. Other digital data as well.

FREE NATIONAL TOPO'S http://store.usgs.gov/b2c_usgs/b2c/start/(xcm=r3standardpitrex_prd)/.do go to this webpage and look on the extreme right side to the box titled TOPO MAPS DOWNLOAD TOPO MAPS FREE.

http://www.geographynetwork.com/ Go here and try their top 5 map services. My favorite is 'USGS Elevation Date.' Zoom in on your favorite places and see great shaded relief images. One of my favorites is the Great Sand Dunes National Park in south central Colorado. Nice Dunes.

http://antwrp.gsfc.nasa.gov/apod/asropix.html Astronomy picture of the day--awesome. I click this page everyday.

http://www.spacimaging.com/gallery/ioweek/iow.htm Amazing satellite images. Check out the gallery.

http://www.ngdc.noaa.gov/seg/topo/globegal.shtml More great maps to share with kids and students.

www.ccgeo.org Don't forget we have our own we page.

http://terra.nasa.gov/gallery/ Great satellite images of Earth.

www.ermaper.com They have a great free downloadable viewer for TIFF and other graphic files called ER Viewer.

http://terrasrver.com Go here to download free aerial photo images that can be plotted under your digital land and well data. Images down to 1 meter resolution, searchable by Lat Long coordinate. Useful for resolving well location questions.

TYPE LOGS OF SOUTH TEXAS FIELDS by Corpus Christi Geological Society

NEW (2009-2010)TYPE LOGS IN RED; *****2011; lost now found

ARANSAS COUNTY
Aransas Pass/McCampbell Deep
Bartell Pass
Blackjack
Burgentine Lake
Copano Bay, South
Estes Cove
Fulton Beach
Goose Island
Half Moon Reef
Nine Mile Point
Rockport, West
St. Charles
Tally Island
Tract 831-G.O.M. (offshore)
Virginia

BEE COUNTY
Caesar
Mosca
Nomanna
Orangedale(2)
Ray-Wilcox
San Domingo
Tulsita Wilcox
Strauch_Wilcox

BROOKS COUNTY
Ann Mag
Boedecker
Cage Ranch
Encintas
ERF
Gyp Hill
Gyp Hill West
Loma Blanca
Mariposa
Mills Bennett
Pita
Tio Ayola
Tres Encinos

CALHOUN COUNTY
Appling
Coloma Creek, North
Heyser
Lavaca Bay
Long Mott
Magnolia Beach
Mosquito Point
Olivia
Panther Reef
Powderhorn
Seadrift, N.W.
Steamboat Pass
Webb Point
S.E. Zoller

CAMERON COUNTY
Holly Beach
Luttes
San Martin (2)
Three Islands, East
Vista Del Mar

COLORADO COUNTY
E. Ramsey
Graceland N. Fault Blk
Graceland S. Fault Blk

DEWITT COUNTY
Anna Barre
Cook
*****Nordheim**
Smith Creek
Warmsley
Yorktown, South

DUVAL COUNTY
DCR-49
Four Seasons
Good Friday
Hagist Ranch
Herbst
Loma Novia
Petrox
Seven Sisters
Seventy Six, South
Starr Bright, West

GOLIAD COUNTY
Berclair
North Blanconia
Bombs
Boyce
Cabeza Creek, South
Goliad, West

St Armo
Terrell Point

HIDALGO COUNTY
Alamo/Donna
Donna
Edinburg, West
Flores-Jeffress
Foy
Hidalgo
LA Blanca
McAllen& Pharr
McAllen Ranch
Mercedes
Monte Christo, North
Penitas
San Fordyce
San Carlos
San Salvador
S. Santallana
Shary
Tabasco
Weslaco, North
Weslaco, South

JACKSON COUNTY
Carancahua Creek
Francitas
Ganado & Ganado Deep
LaWard, North
Little Kentucky
Maurbro
StewartSwan Lake
Swan Lake, East
Texana, North
West Ranch

JIM HOGG COUNTY
Chaparosa
Thompsonville,N.E.

JIM WELLS COUNTY
Freebom
Hoelsher
Palito Blanco
Wade City

KARNES COUNTY
Burnell
Coy City
Person
Runge

KENEDY COUNTY
Candelaria
Julian
Julian, North
Laguna Madre
Rita
Stillman

KLEBERG COUNTY
Alazan
Alazan, North
Big Caesar
Borregos
Chevron (offshore)
Laguna Larga
Seeligson
Sprint (offshore)

LA SALLE COUNTY
***Pearsall**

LAVACA COUNTY
Halletsville
Hope
Southwest Speaks

Southwest Speaks Deep

LIVE OAK COUNTY
Atkinson
Braslau
Chapa
Clayton
Dunn
Harris
Houdman
Kittie West-Salt Creek
Lucille
Sierra Vista
Tom Lyne
White Creek
White Creek, East

MATAGORDA COUNTY
Collegeport

MCMULLEN COUNTY
Arnold-Weldon
Brazil
Devil's Waterhole
Hostetter
Hostetter, North

NUECES COUNTY
Agua Dulce (3)
Arnold-David
Arnold-David, North
Baldwin Deep
Calallen
Chapman Ranch
Corpus Christi, N.W.
Corpus Christi West C.C.
Encinal Channel
Flour Bluff/Flour Bluff, East
GOM St 9045(offshore)
Indian Point
Mustang Island
Mustang Island, West
Mustang Island St. 889S(offshore)
Nueces Bay/Nueces Bay West

Perro Rojo
Pita Island
Ramada
Redfish Bay
Riverside
Riverside, South
Saxet
Shield
Stedman Island
Turkey Creek

REFUGIO COUNTY
Bonnieview/Packery Flats
Greta
La Rosa
Lake Pasture
Refugio, New
Tom O'Connor

SAN PATRICIO COUNTY
Angelita East
Commonwealth
Encino
Enos Cooper
Geronimo
Harvey
Hiberia
Hodges
Mathis, East
McCampbell Deep/Aransas Pass
Midway
Midway, North
Odem
Plymouth
Portilla (2)
Taft
Taft, East
White Point, East

STARR COUNTY
El Tanque
Garcia
Hinde
La Reforma, S.W.
Lyda
Ricaby
Rincon
Rincon, North
Ross
San Roman
Sun
Yturria

VICTORIA COUNTY
Helen Gohike, S.W.
Keeran, North
Marcado Creek
McFaddin
Meyersville
Placedo

WEBB COUNTY
Aquilares/Glen Martin
Big Cowboy
Bruni, S.E.
Cabezon
Carr Lobo
Davis
Hirsch
Juanita
Las Tiendas
Nicholson
O'Hem
Olmitos
Tom Walsh

WHARTON COUNTY
Black Owl

WILLACY COUNTY
Chile Vieja
La Sal Vieja
Paso Real
Tenerias
Willamar

ZAPATA COUNTY
Benavides
Davis, South
Jennings/Jennings, West
Lopeno
M&F
Pok-A-Dot

ZAVALA COUNTY
El Bano

Call Coastal Bend Geological Library, Maxine: 361-883-2736
I log -- $10 each, 5-10 logs $9 each and 10 + logs $8.00 each – plus postage

OIL MEN

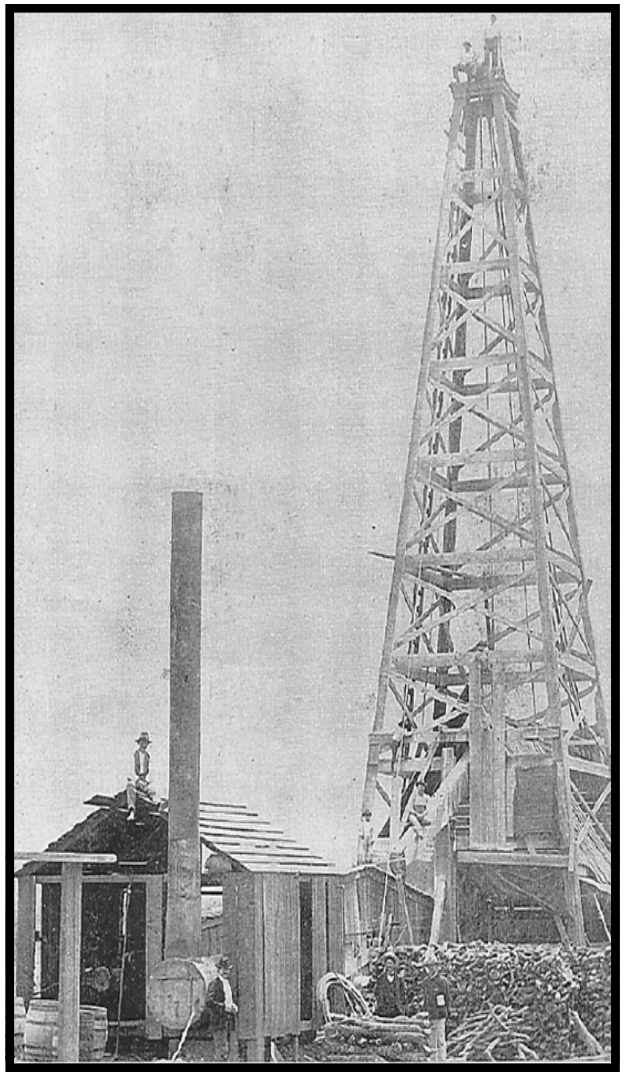
TALES FROM THE SOUTH TEXAS OIL PATCH

DVD

MEMBER PRICE $25

NONMEBER $30

To Order DVD
Sebastian Wiedmann
swiedmann@braytoncc.com
If mailed add $5



Wooden Rigs—Iron Men

The Story of Oil & Gas in South Texas

By Bill & Marjorie K. Walraven

Published by the

Corpus Christi Geological Society

Corpus Christi Geological Society
C/O Javelina Press
P. O. Box 60181
Corpus Christi, TX 78466

Order Form

Mail order form for Wooden rigs-Iron Men. The price is $75 per copy, which includes sales tax, handling, and postage

Name_____

Address_____

City, State, Zip_____

No. of books_____ Amount enclosed_____

Send to Corpus Christi Geological Society Book Orders
P. O. Box 60181
Corpus Christi, TX. 78466 Tax exempt# if applicable_____

david becker

geologist

David Becker
exploration
geologist

o: (361) 884-3613
f: (888) 869-2011

600 leopard st. ste 706
corpus christi, tx 78473

dkbecker1137@sbcglobal.net

Bier Seis, Inc.
Geophysical Consulting

David Biersner, President
19446 Arrowood Place
Garden Ridge, Tx 78266
Cell: 281.744.7457
E-Mail: bierseis@yahoo.com

Field Quality Control
Program Management
Permit Management
Seismic Line Clearing
Supervision

Dawn S. Bissell
Geoscientist

Advent Geoscience Consulting, LLC

Phone: 361-960-2151
Fax: 961-854-2604
Email: bissells@swbell.net

253 Circle Drive
Corpus Christi, TX 78411
Home: 361-854-2635

James L. Claughton
CONSULTING GEOLOGIST

Office | 361-887-2991
Fax | 361-883-4790
Cell | 361-960-2014
clausoie@sbcglobal.net

615 North Upper Broadway
Suite 1935
Corpus Christi, Texas
78401-0779

TEXAS LONE STAR
PETROLEUM CORPORATION

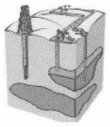
OIL Exploration & GAS Production

JEFF COBBS
President - Geologist

615 Leopard St., Suite 336
Corpus Christi, Texas 78401-0610
jc@tlspc.com

Office(361) 883-2911
Cell (361) 960-0530

Jim Collins
Geoscientist



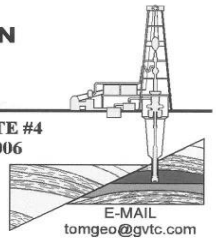
361.537.4034
jim@gulfcoastgas.com

SV Energy Company, LLC
Conventional Thinking. Unconventional Results.

Frank G. Cornish
Consulting Geologist
615 N. Upper Broadway, Suite 1770
Corpus Christi, TX 78401
frank.cornish@gmail.com

361-883-0923 (o)
1-800-510-5810 (f)
361-563-9184 (m)

TOM DAVIDSON
GEOLOGIST



28550 IH-10 WEST SUITE #4
BOERNE, TEXAS 78006

BUS: (210) 844-8963
RES: (830) 981-5883
FAX: (830) 981-5567
CEL: (210) 844-8963

E-MAIL
tomgeo@gvtc.com

SeismicVentures®

Sara Davis
Business Development Manager
s_davis@seismicventures.com

Seismic Ventures, LLC
4805 Westway Park Blvd.
Suite 100
Houston, Texas 77041

tel: 281-240-1234 (x3206)
cel: 713-256-8737
fax: 281-240-4997
www.seismicventures.com

ONE APEX ENERGY, INC.

CHRISTIAN DOHSE
Consulting Geologist

(361) 877-3431
CHRISTIAN.DOHSE@GMAIL.COM
CORPUS CHRISTI, TX

Tommy Dubois
Geologist

2627 CR 312
Yoakum, Texas 77995

361-215-0223 ***tvdubois@yahoo.com***

Enrique (Rick) Garza
Operation Supervisor
US Land

Global Geophysical Services | Geoscience Solutions

Rick.Garza@GlobalGeophysical.com
DIRECT +1 713-808-7428
MOBILE +1 361-701-6480
FAX +1 713-808-7928
13927 South Gessner Road
Missouri City, Texas 77489 USA
www.GlobalGeophysical.com

GISLER BROTHERS LOGGING CO., INC.

P.O. BOX 485
106 E. MAIN
RUNGE, TX 78151

Wes Gisler
Bus. (830) 239-4651
Mobile (361) 676-1369

Home (830) 239-4914
Direct (830) 239-4693
wes@gislerbrotherslogging.com

Robert Graham
President
grexploration@gmail.com

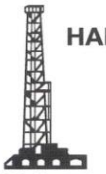
Phone 361-882-7681
Fax 361-882-7685
Cell 361-774-3635

GrX Inc.
Exploratory Prospects & Production Development

Mail:
P. O. Box 1843
Corpus Christi, Texas
78403-1843

Office:
606 N. Carancahua, Ste. 610
Corpus Christi, Texas
78401-0634

RAY GOVETT, Ph. D.
CONSULTING GEOLOGIST
361-855-0134



HART EXPLORATION, LLC.

RICK HART
Geologist / Owner

P.O. Box 729
Coldspring, Texas 77331

Cell: 512-626-3053
Email: hartexploration@aol.com

RIVIERA EXPLORATION, LLC

H. TONY HAUGLUM
President

600 LEOPARD ST.
SUITE 1704
CORPUS CHRISTI
TEXAS 78401

PHONE 361.884.1811
FAX 361.884.8071
E-MAIL THAUGLUM@SWBELL.NET

SUEMAUR EXPLORATION & PRODUCTION, LLC

FROST BANK PLAZA
802 N. CARANCAHUA, SUITE 1000
CORPUS CHRISTI, TEXAS 78401-0015

BRENT F. HOPKINS
PRESIDENT AND CEO
GEOLOGIST

OFFICE: (361) 884-8824
FAX: (361) 884-9623
RES: (361) 643-8373
CELL: (361) 215-4855
Email: brenth@suemaur.com

---

eog resources

EOG Resources, Inc.
539 N. Carancahua
Suite 900
Corpus Christi, TX 78401-0908
Direct: (361) 887-2681

Randy Lambert
Geological Advisor

Fax: (361) 844-1546
randy_lambert@eogresources.com

LMP

Louis R. Lambiotte
Geologist

LMP Petroleum, Inc.
615 N. Upper Broadway, Suite 1770
Corpus Christi, TX 78477
Tel: (361) 883-0923
Fax: (361) 883-7102
E-mail: geology@LMPexploration.com

James R. Jones
Geologist

7434 Long S Drive
Corpus Christi, TX 78414
361-779-0537
jrjones5426@aol.com

THOMAS W. SWINBANK
CERTIFIED PETROLEUM GEOLOGIST
PRESIDENT

STRIKE OIL & MINERALS CORP.
P.O. BOX 1339
GEORGETOWN, TEXAS 78627

PHONE/FAX 512-863-7519
HOME 512-863-7903
CELL 512-876-9585

Dennis A. Taylor
Vice President of Geology
dennis@amshore.com

Off: (361) 888-4496
Fax: (361) 888-4588
Direct Line: (361) 844-6722
Cell: (972) 672-9916

AMERICAN SHORELINE, INC.
AMSHORE TEXAS WIND, LLC
802 N. Carancahua Street, Suite 1250
Corpus Christi, Texas 78401-0019
www.amshore.com

Environmental *Exploration & Production*

JEANIE TIMMERMANN
GEOSCIENTIST
TX LICENSE #2289

7214 Everhart #9
Corpus Christi, TX 78413

(361) 991-7451
jtimmermann74@msn.com

Jim Travillo
Senior Geoscientist

1330 Post Oak Boulevard
Suite 600
Houston, Texas 77056

Direct: 713.439.6773
Main: 713.626.7766
Fax: 713.626.7775
Cell: 713.823.9332

jtravillo@davcos.com

Davis Petroleum Corp.
www.davispetroleumcorp.com

WesternGeco

10001 Richmond Avenue
Houston, TX 77042-4299
P.O. Box 2469 (77252-2469)
Tel: 713-689-6552
Fax: 713-689-1089
Mobile: 281-615-6827
CTutt@slb.com

Chris O. Tutt
Sales Representative
NAM Sales

SEBASTIAN P. WIEDMANN
GEOSCIENTIST

WILSON PLAZA WEST
606 N. CARANCAHUA, SUITE 500
CORPUS CHRISTI, TEXAS 78401

OFFICE (361) 884-4084
FAX (361) 882-7816
MOBILE (361) 946-4430
swiedmann@braytoncc.com

---

ion
GEOVENTURES®

Dave Willis
Onshore Sales

Main +1 713 789 7250
Direct +1 281 781 1035
Mobile +1 281 543 6189
Fax +1 713 789 7201
dave.willis@iongeo.com

2105 CityWest Blvd. | Suite 900
Houston, TX 77042-2839 USA

WesternGeco

10001 Richmond Avenue
Houston, Texas 77042-4299
P.O. Box 2469 (77252-2469)
Tel: 713-689-2757
Fax: 713-689-1089
Mobile: 281-658-5263
CYanez@slb.com

Charles Yanez
Manager
Shared Value Optimization

STALKER ENERGY, L.P.

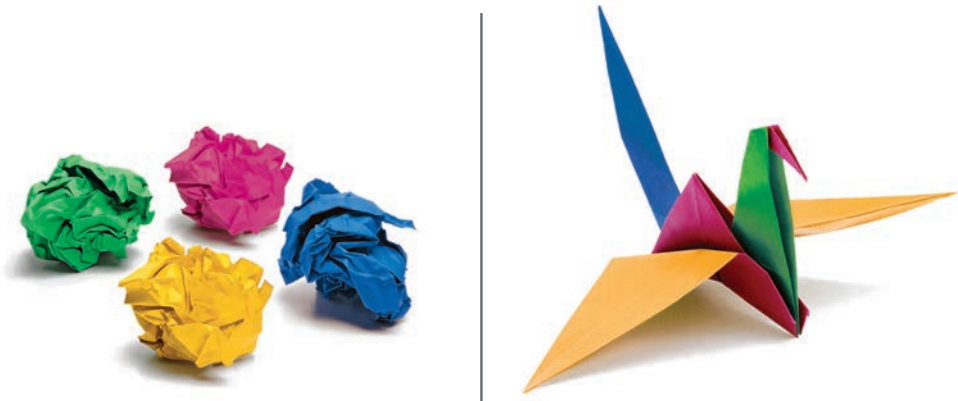
WILLIAM A. WALKER, JR.
Certified Petroleum Geologist
bwalker@stalkerenergy.com

1717 WEST 6TH STREET, STE. 230 • AUSTIN, TX 78703
2001 KIRBY DR., STE. 950 • HOUSTON, TX 77019

AUSTIN
512.457.8711
cell: 512.217.5192
fax: 512.457.8717

HOUSTON
713.522.2733
cell: 512.217.5192
fax: 713.522.2879

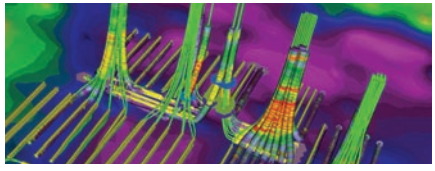
YOUR CARD COULD BE HERE!!!
$30 FOR 10 ISSUES
AD PRICES PRO-RATED
EMAIL CHRISTIAN AT
CHRISTIAN.DOHSE@GMAIL.COM



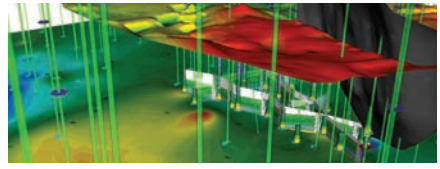
Build reservoir analyses. Watch your potential soar.

IHS PETRA® provides a unique solution to integration, analysis and manipulation of geological, geophysical, petrophysical and engineering information. With easy data loading and a powerful and flexible database, you can both effectively manage projects and quickly visualize results using interactive mapping, cross sections, log plots, cross plots and more—all within a single system. Superior technical support and proven integration of customer enhancements make PETRA the highest-ranked[1] geological interpretation tool in the E&P industry for both reliability and accuracy and ease of use. **Energy information, refined.**

[1] Welling & Company Geological & Geophysical Software Study, 2009



Directional Well Module



3D Visualization Module

ihs.com/petra-ccgs-1

IHS

The Source
for Critical Information and Insigh