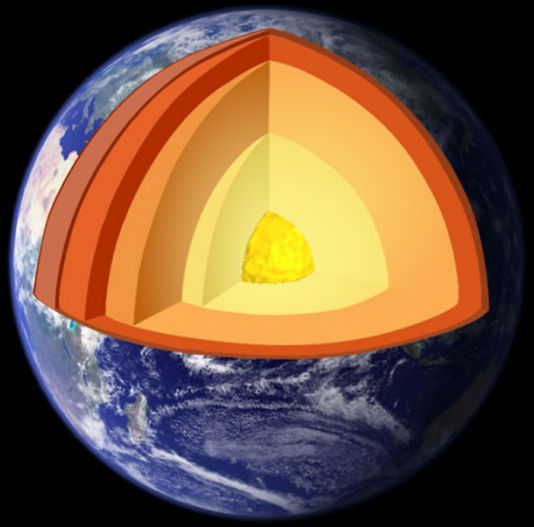
Introduction to Geology - GEOL100



Geology 100 – Physical Geology

Asynchronous Online Lecture Class

Miramar College

Instructor: Ray Rector

Course Intro Lecture Agenda

- Course Description
- Review Course Syllabus
- Review Course Schedule
- Meet Your Professor
- Intro to the World of Geology
  - ✓ What is Geology?
  - ✓ What Do Geologists Do?
  - ✓ Importance of Earth Science Literacy
  - ✓ Scientific Method
  - ✓ San Diego Geology

Course Description

- Examine the Geologic Features and Processes of the Earth

Topics Include:

- Scientific Method
- Origin of Earth
- Plate Tectonics
- Minerals
- Rocks
- Geologic Dating
- Structural Geology
- Mountain Building
- Earthquakes
- Rivers and Groundwater
- Shorelines
- Glaciation and Climate Change

Course Design

- Lecture-Based Format
- Course Activities Include:
  - Textbook study
  - Video-taped lecture slides
  - Geology video documentaries
  - Online interactive exercises
  - Lecture discussion forums
  - Demonstrations
  - Virtual geology fieldtrips
  - Geologic science research

Course Syllabus

- Basic Logistics
- Course Objectives
- Important Enrollment Dates
- Instructor's Attendance Policy
- Plagiarism
- Grading
- Extra Credit
- Important Dates
- Study Materials
- Schedule of Study

Course Syllabus – Course Essential Information

Course Syllabus **Fall 2023** **San Diego Miramar College**

GEOL 100 - PHYSICAL GEOLOGY (Purely Online/Asynchronous - Canvas) – CRN: 40054

3 Lecture Hours: 3 Units; Letter Grade; Student may petition for Credit/No Credit (FT).
Credit Transferability: Credit - Degree Applicable; Transfer Credit: UC, CSU; CSU GE: B1. Physical Science; DIST GE: B2. Physical Sciences; IGETC: 5A. Physical Science

Online Course Duration: August 21, 2023 through December 16, 2023 - Purely Online and Asynchronous

Instructor: R. Ray Rector **Instructor Contact: e-mail:** geoprof@geoscirocks.com

Office Hours: Thursdays: 6:00pm to 7:00pm Email/Discussion Board/Chat Room/Zoom and by Appointment

Course Canvas URL: https://sdccd.instructure.com/login/canvas

Instructor's Web site: www.geoscirocks.com/

Required, No-Cost Course Textbook: An Introduction to Geology Authors: Chris Johnson, Matthew D. Affolter, Paul Inkenbrandt, Cam Mosher Publisher: SLCC Text URL: https://opengeology.org/textbook/

PREREQUISITES ADVISORY FOR ONLINE COURSE: This being an online course, it is advisable that you are computer literate, with a good working knowledge of the World Wide Web, e-mail, and word-processing. A high-speed Internet connection is most advantageous.

COURSE DESCRIPTION: Pursuit of understanding the physical characteristics of the earth as a whole and its past, present, and future evolutionary process. Unifying concepts such as plate tectonics, uniformitarianism, and geologic time will be studied. The causes of natural geologic hazards and their effects on people, society, and the environment will also be explored.

STUDENT LEARNING OUTCOME: Upon completion of this course: the successful student will be able to differentiate among the 3 major types of plate boundaries and recognize their characteristic geologic features.

Course Syllabus – Enrollment and DSPS

CLASS ATTENDANCE, AND ENROLLMENT NOTES, AND DEADLINES: ALL STUDENTS registered in this course prior to the start date MUST sign-in into the official Canvas course page sometime on or before the end of the FOURTH DAY of classes on the first week of the semester - **Thursday, August 24, 2023**, in order to stay registered in the course. If you do not log by the above date, then I will drop you and give your seat to a waitlisted student. The last day to withdraw with a refund and with no grade (no "W" placed on permanent record.) is **Friday September 1, 2023**. The very last day to drop a class with a "W" is **Friday, October 27, 2023** (the official withdrawal deadline). If you fail to withdraw by **10/27/23** and/or stop participating in class, then a final grade must be assigned to you. The deadline to file a petition for PASS/NO PASS grade option is **Friday, October 27, 2023.**

It is the student's responsibility to add, drop, or withdraw from classes before the deadlines stated in the class schedule. Petitions to add, drop, or withdraw after the deadline will not be approved without written proof of circumstances beyond the student's control, which made her/him unable to meet the deadline. Lack of money to pay fees is not considered an extenuating circumstance. Students anticipating difficultly in paying fees before the deadline should check with the Financial Aid Office about sources of funds or other alternatives for which they may be eligible. Registered students who do not login onto this Canvas course and participate in our virtual classroom over a period of 18 consecutive days will be dropped from this course for lack of participation. Students, who remain enrolled in a class beyond the published withdrawal deadline, as stated above (as listed in the official class schedule) will receive an evaluative letter grade in this class.

STATEMENT OF RETENTION: Students, please discuss your plans to withdraw from class with your instructor. You might have options that may allow you to continue in class.

ACCOMMODATION OF DISABILITY: If you have a disability, you are encouraged to contact Disabled Students Programs & Services at 619-388-2780, email mesadsps@sdccd.edu or stop by I-405 in the Student Services Building. They will help you determine what assistance is available for you. Current students who have received services from Mesa DSPS within the last year you can request an accommodation letter for the current or upcoming semester through the MyDSPS Portal. Please submit your DSPS paperwork to the instructor in a timely manner.

Course Syllabus – Online Course Policies

INSTRUCTOR'S ONLINE COURSE POLICIES:

A. Student Workload Obligations: Independent direction, discipline and motivation of the student are critical to both learning course content and academic success in this online course. It will be up to you, the student, for staying up with homework assignments, quizzes, and exams. Make sure and consult the instructor and/or fellow classmates about anything in this course that you find difficult and/or confusing. There are no make-up exams or accepted late work, unless the student provides proof of some compelling reason for the make-up. It is the student's responsibility to contact me personally to forewarn me of any problem in completing the regular-scheduled exams or other coursework by their due dates. Business, pleasure, or being generally ill, is not a compelling reason. Being deadly sick or having a death in the family is good reason.

B. Instructor-Student Communication This course is taught as a completely on-line course and asynchronous. That is, the communication between the instructor and the students, as well as among students, takes place via electronic means on the Internet. Communication will occur via email, discussion board and Zoom. The instructor will be initiating contact with students on a nearly daily basis, via announcements, discussion board posts, email, recorded Zoom, and by phone. Students are expected to log into the Canvas course page regularly (several time per week) to update communication with instructor and fellow students. Note that there is no mandatory classroom Zoom meetings scheduled for this class. However, non-mandatory, synchronous, and recorded Zoom meetings may occur during the course.

C. Course Assignments and Testing: Assignments, either for discussion on the bulletin board, or for completion and return to the instructor, will be posted on the Canvas course site. Student contributions will be evaluated on both the quality (intelligent use of scientific terminology learned from using the textbook and other sources) and quantity (frequency and length) of comments. Reports from students, which are submitted directly to the instructor, will be evaluated based on quality (use of appropriate scientific vocabulary, for instance) and on rigor of the analysis. Testing will occur via the Internet, and tests will use a variety of formats (true-false, multiple-choice, matching, short answer, and essay).

Course Syllabus – Online Course Policies

D. Deadlines, Computer/Internet Mishaps, and Backing up: Timelines, Deadlines, etc.: Quizzes will be available each week and will appear with a due date. Availability for quizzes and exams prior to the finishing deadline is roughly three to four days. The research writing assignment will not be accepted or submitted following the due date. Note that because it sometimes happens that computer networks (including your own computer) are down or unavailable, it is preferable to get assignments done a day or two earlier, so as to avoid trying to post an assignment on the very last minute of the due date, only to find that one's Internet Service Provider is down, for example. ALSO, as with any writing endeavor on a computer, YOU MUST ALWAYS BACK-UP ALL YOUR WORK on an external memory device, in timely increments. The excuse that you permanently lost your entire writing assignment file during a computer crash or Internet disruption is not acceptable, because those sorts of mishaps are totally avoidable by doing regular backup. Additionally, you need to make sure to ALWAYS HAVE A BACK-UP COMPUTER at your disposal: family members, friends, or library, school, or even your own secondary computer/smart phone. Finally, you must have a *reasonably high speed, solidly consistent, trustworthy Internet connection*, especially for test taking, viewing streaming videos, and assignment submission.

E. Online Netiquette and Student Code of Conduct: This class will be conducted in accordance with the college code of student conduct and basic standards of academic honesty. Students are expected to respect and obey standards of student conduct while interacting online in this course. As your instructor, I have the following expectations of your academic behavior while online: Promote a positive learning environment by exhibiting mutual respect and consideration of the feelings, ideas, and contributions of others, as reflected in your written dialog. Demonstrate a genuine desire to learn, interact, and improve.
Cheating, plagiarism, or other forms of academic dishonesty are totally unacceptable and will not be tolerated in this class. Violations of standards of academic honesty will be reported to the school dean for appropriate action. A detailed explanation of academic integrity of students is found below:

Course Syllabus – Cheating and Plagiarism Policy

Any student caught cheating or plagiarizing will be subject to the disciplinary procedures given in District Policy 3100, which may include receiving a failing grade for the assignment. Any cheating or plagiarism will be reported to the Dean of Student Affairs. Specifically, the following behaviors are examples of cheating/plagiarism (this list is not exhaustive).

- Copying directly from the textbook. Note: you're welcome to summarize the information from when completing homework assignments, but please phrase homework answers in your own words!
- Using unauthorized notes while taking an exam or copying another student's work.
- Sharing exam answers or collaborating with another student during an exam.
- Turning in homework that contains large blocks of text that are identical or nearly identical to another student's (both parties will receive zero score).
- Copying from any source (including the Internet) without citing the source.
- Turning in work completed for another class (unless pre-authorized by the instructor).
- Passing off any work as your own that is not. This includes the use of work completed by other students.

To avoid any possibility of someone else plagiarizing your work, I highly recommend that you not share any content-specific material (such as exam answers, homework, or field trip reports) with any other students. Please note that if I receive any course work from two or more students that is identical or strikingly similar, I reserve the right to assign all such students a score of zero for the assignment in question. Please also note that if I suspect academic dishonesty on an assignment or an exam, I reserve the right to schedule a one-on-one Zoom meeting to give you the opportunity to demonstrate that you understand the answer(s) you supplied. If a student is unable to demonstrate their understanding of an exam/assignment answer, I reserve the right to assign the student a score of zero for that exam/assignment.

If you have any concerns regarding plagiarism or cheating, please contact the instructor.

Course Syllabus – Grading Policy

GRADING/EVALUATION: Grading is based on points earned by completing assignments and tests. Final course grades are based purely on point percentages without any type of weighting. The following is the course grading points breakdown based on the assessment activity:

I. Quizzes (10 @ 30 points each) = 300 points. **Note:** You get three (3) attempts per quiz. Untimed/Open book.

II. Exams (2 @ 150 points each) = 300 points. **Note:** You get one (2) attempts per exam. Timed/Open book

III. Assignments (3 @ 15 + 40 + 75 points) = 140 points; Personal greeting assignment = 20 pts; Geology in the News assignment = 50 pts; Earthquake Research assignment = 70 pts

V. Late Work Policy: No late work accepted, unless with a verifiable, legitimate excuse.

VI. Extra Credit Policy: Extra credit is available - up to 35 points maximum. Last day to turn in extra credit work is Sunday, December 10, 2023 - **Absolutely no EC work accepted after this date**.

VII. Grading Scale: Your final grade is based purely on total percentage out of possible 740 points:

100% – 90% = A
89% -- 80% = B
79% -- 70% = C
69% -- 55% = D
Less than 55% = F

Note: *Minor adjustments to the deadlines and total course grade points may be made by instructor during the semester. If changes are made, the instructor will inform the students in a timely manner.*

Course Syllabus – Important Course Dates

Course Testing Schedule:

1) Quiz I: Sunday, August 27
2) Quiz II: Sunday, September 17
3) Quiz III: Sunday, September 24
4) Quiz IV: Sunday, October 1
5) Quiz V: Sunday, October 15
6) Midterm Exam: Sunday, October 22
7) Quiz VI: Sunday, October 29
8) Quiz VII: Sunday, November 5
9) Quiz VIII: Sunday, November 12
10) Quiz IX: Sunday, November 19
11) Quiz X: Sunday, December 10
12) Final Exam: Sunday, December 17

IMPORTANT COURSE DATES: Assessment of student learning outcomes for this class includes 10 quizzes, 2 exams, and 3 assignments. Each assessment activity has a specific submittal due date. Make sure to keep a VERY CLOSE track of the class schedule of activities, so that you stay on track with your coursework, and get all your fully completed work turned in on time. I suggest printing out the class schedule and taping it somewhere around your work area that you can view it regularly.

Below are ten important deadline dates for this course, not including quiz dates:

1) Quiz and Exam completion dates are all on Sundays.
2) Class Personal Introduction Discussion Assignment due by Thursday, August 24, 2023
3) Last day to drop without a "W" AND get a refund is Friday, September 1, 2023
4) Geology in the News Discussion Assignment due Sunday, October 8, 2023
5) Midterm exam completion date is Sunday, October 22, 2023
6) Last day to change grade modality to Pass/No Pass is Friday, October 27, 2023
7) Last day to drop class with a "W" (withdraw) is Friday, October 27, 2023
8) Earthquake Research Assignment due Sunday, December 3, 2023
9) Last day to turn in extra credit is Sunday, December 10, 2023 – No late exceptions!
10) Final exam completion date is Sunday, December 17, 2023

EXTRA CREDIT: There are numerous extra credit assignments available: they include virtual fieldtrips, video documentaries, and other research activities. Extra credit assignments are listed in the Extra Credit Folder. Up to 30 points of extra credit is allowed in this course. ***Extra Credit Deadline:*** *All extra credit must be turned in by* ***Sunday, December 10th*** *for credit. Late extra credit work will not be accepted - no exceptions – period.*

Course Syllabus – Study Resources

STUDY MATERIALS FOR THIS COURSE:

This class is a No-Cost class. Additionally, there are FOUR primary, cost-free sources of information that are available for successfully completing this course - they are: 1) Free, open-source website textbook; 2) Earth Revealed Video Lessons available online from the instructor's personal website; 3) the instructor's PowerPoint lecture slides and lecture notes; and 4) Geology video slide tutorial lessons.

Below are details of these FOUR learning resources:

1) Cost-free E-Textbooks:

Primary text: "Introduction to Geology" E-Textbook: **https://opengeology.org/textbook/**

This geology course uses a no-cost website-accessed e-textbook titled "A Introduction to Geology". Authored by Chris Johnson, Matthew D. Affolter, Paul Inkenbrandt, Cam Mosher; Published by Salt Lake Community College; The text covers all the course topics, and includes key concepts, practice quizzes and study guides.

Supplementary text: "Physical Geology 101": http://gotbooks.miracosta.edu/geology/index.html

This geology course also uses an additional no-cost e-text that you can use to supplement the main text. This text has a very different chapter format, but with similar content.

2) Earth Revealed Geology Video Series: **www.learner.org/resources/series78.html**

The Annenberg Media Company has available an excellent geology video instructional series called "Earth Revealed" (a total of twenty-six 30-minute videos). Links to these videos can be accessed from the instructor's personal website. I have listed the Earth Revealed video series number(s) that correspond to the specific topic(s) of study each week within the class schedule next to the textbook chapter reading assignments. Some quiz questions pertain to Earth Revealed content.

Course Syllabus – Study Resources

3) Professor's Recorded Lectures and PowerPoints: Professor's PP Slides

The professor's recorded lectures and PowerPoint slide presentations provide a wealth of useful information that closely align with the textbook, ER videos, and test questions. Watch the professor's lectures and view the complimentary PowerPoint presentations prior to completing the associated quizzes, exams, and assignments. The professor's recorded lectures and PowerPoints can be accessed from the Canvas course site, and specific lectures and PowerPoints are listed for each week of class in the course schedule.

4) Geology Topics Tutorial Videos:
http://www.geoscirocks.com/intro_to_geology_lectures_silde_videos.htm
Finally, there are a set of geology topics slide show tutorial videos that are designed to help you better learn the course curriculum. These captioned video slide shows were put together by Katryn Wiese, an earth science professor at the City College of San Francisco. These narrated slide shows are very well designed and highly recommended as part of your study plan.

INSTRUCTOR'S PERSONAL STUDENT WEBSITE: www.geoscirocks.com

To compliment the textbook and ER video series learning resources, the professor has a personal educational website for students that include lecture notes and PowerPoint presentations, plus a wealth of additional, useful information.

Click on the Miramar Online link to access all information pertaining directly to this course. Browse down the left-hand side menu for pertinent coursework information and resources. Additionally, the site has links to the "Earth Revealed" geology instructional video series – a set of 26 half-hour lessons that requires a high-speed connection to watch. I have listed the "Earth Revealed" video series number(s) that correspond to the specific topic(s) of homework study each week within the class schedule below the textbook chapter reading assignments. Note that information found within the Earth Revealed videos is included in the test questions within the quizzes and exams.

Course Schedule – Weeks 1 and 2

Geology 100 Online Schedule – Fall 2023 – San Diego Miramar College

Weekly Study Topic	Assigned Weekly Homework	Tests and Assignments	Due Date
Week 1 - 8/21 to 8/27			
Introductions to Class	Prof's Welcome Message Prof's Video Welcome Personal Intro assign in Discussion Folder Professor's PowerPoints (PPP 1	**Post Personal Introduction on Discussion Board**	**Thur 8/24**
Course Logistics	Course Syllabus and Schedule	**Quiz #1** – Course Syllabus and Intro to Geologic Science	**Sun 8/27**
Intro to Geology **Earth Origins**	Textbook Chapter 1 Professor's PowerPoints 1 Earth Revealed Video 1 Geo Tutorial Videos 1 - 5		
Week 2 - 8/28 to 9/3			
Earth Physiology **Plate Tectonic Theory**	Textbook Chapter 2, 8 Earth Revealed Videos 2, 3, 4, 5, 6 Prof's PowerPoints (PPP) 2, 3, 4, 5 Geo Tutorial Videos 6 - 17		

Course Schedule – Weeks 3 to 5

Week 3 - 9/4 to 9/10

Plate Tectonic Theory	Textbook Chapters 2, and 8
Seafloors and Continents	Earth Revealed Videos 2, 3, 4, 5, 6 Prof's PowerPoints 2, 3, 4, 5 Geo Tutorial Videos 6 - 17

Week 4 - 9/11 to 9/17

Quiz #2 – Earth Origin, Physiology, and Plate Tectonics — **Sun 9/17**

Minerals	Textbook Chapters 3 and 16
Mineral Resources	Earth Revealed Videos - 12 and 26 Prof's PowerPoints 6 Geo Tutorial Videos– 18, 19, 20

Week 5 - 9/18 to 9/24

Quiz #3 - Minerals and Mineral Resources — **Sun 9/24**

Igneous Rocks	Textbook Chapter 4
Magmas	Earth Revealed Video 13, , 14
Volcanoes	Prof's PowerPoints 7 Geo Tutorial Videos – 21, 22, 23, 24

Course Schedule – Weeks 6 to 9

Week 6 - 9/25 to 10/1			
Sediments **Sedimentary Rocks**	Textbook Chapter 5 Earth Revealed Video 15, 17 Prof's PowerPoint 8 Geo Tutorial Videos – 25,	**Quiz #4** – Igneous Rocks, Magmas and Volcanoes	**Sun 10/1**
Week 7 - 10/2 to 10/8			
Metamorphism **Metamorphic Rocks**	Textbook Chapter 6 Earth Revealed Video 18 Prof's PowerPoint 9 Geo Tutorial Videos –26	**Geology-in-the-News Assignment** - Post your completed assignment on the discussion board	**Sun 10/8**
Geology-in-the-News Assignment	Assignment Info in Discussion Board Folder		
Week 8 - 10/9 to 10/15		**Quiz #5** – Sedimentary Rocks & Metamorphic Rocks	**Sun 10/15**
Midterm Exam Study Week **Make-ups** **Review and Test**	Midterm Exam Review – Textbook *Chapters 1-8*; Earth Revealed Video 1-6 8-18 Prof's PowerPoints 2-10 Geo Tutorial Videos – 1- 28	**Midterm Exam** – All course material covered from Quiz 1 through Quiz 5. Exam available on 10/18	
Week 9 - 10/16 to 10/22	**Midterm Exam Deadline**	**Last day to take the midterm**	**Sun 10/22**
Geologic Time, Geo-Dating and Earth History	Textbook Chapters 7, and 8 Earth Revealed Videos – 9 and 10 Prof's PowerPoint 10 Geo Tutorial Videos – 27, 28		

Course Schedule – Weeks 10 to 13

Week 10 - 10/23 to 10/29		**Quiz #6** –Geologic Time, Dating Rocks, and Earth History	**Sun 10/29**
Mountain Building **Crustal Deformation**	Textbook Chapters 2, and 8; Earth Revealed Videos 7 and 8 Prof's PowerPoint 11 Geo Tutorial Videos – 33, 34, 35, 36	**Pass/No Pass Deadline** **Withdrawal Deadline**	**Fri 10/27** **Fri 10/27**
Week 11 - 10/30 to 11/5		**Quiz #7** – Crustal Deformation and Mountain Building	**Sun 11/5**
Earthquakes **Seismic Hazards**	Textbook Chapter 9 Earth Revealed Video 3, and 9 Prof's PowerPoint 12 Geo Tutorial Videos – 33, 32, 34		
Week 12 - 11/6 to 11/12		**Quiz #8** – Earthquakes	**Sun 11/12**
Mass Wasting **Rivers Systems** **Groundwater**	Textbook Chapters 10 and 11, Earth Revealed Video 19, 20, 21 Prof's PowerPoints 13, 14 Geo Tutorial Videos – 37, 38, 39,		
Week 13 - 11/13 to 11/19		***Quiz #9***– Rivers & Groundwater	**Sun 11/19**
Shorelines **Human Impacts on Coastlines**	Textbook Chapter 12 Earth Revealed Video 16, 23 & 24 Prof's PowerPoint 13, 14 and 15 Geo Tutorial Videos – 41, 42, 46		
Quake Assignment	EQ Research Assignment – See Assignment Folder for info		

Course Schedule – Weeks 14 to Finals

Thanksgiving Week - 11/20 to 11/26 -	No Homework	Not Tests	
Week 14 - 11/27 to 12/3			
Glaciers	Textbook Chapter 14 Earth Revealed Video 16, Prof's PowerPoint 14 Geo Tutorial Videos – 40	**Submit Earthquake Module Work** in the Assignment folder	**Sun 12/3**
Week 15 - 12/4 to 12/10			
		Quiz #10 *– Shorelines, Glaciation and Climate Change*	**Sun 12/10**
Climate Change	Textbook Chapter 15 Earth Revealed Video 23 & 24 Prof's PowerPoint 15 Geo Tutorial Videos – 46		
Extra Credit Work	Extra Credit Work – Find EC in the Assignment folder	**Last day to Submit Extra Credit**	**Sun 12/10**
Finals Week - 12/11 to 12/17 -			
Final Exam – Review and Test	Final Exam Study Guide Textbook Ch 2, 9 - 15 Earth Revealed Video 7, 16, 19-24 Prof's PowerPoint 11-15 Geo Tutorial Videos – 29-46	**Final Exam** - All course material after the midterm exam (covered in quizzes 6 through 10). Exam available to take on 12/13	**Sun 12/17**

Canvas Home Page

Fall 2023

- Home
- Announcements
- Syllabus
- Grades
- Assignments
- Quizzes
- Discussions
- People
- Modules
- Studio
- Chat
- SDCCD Zoom
- Tutoring
- Library
- Office 365

Fall 2023 - GEOL 100 (40054)

Edit

Welcome to SD Miramar College Online Geology!

Fall 2023

16-week Course -- August 21st through Deember 16th -- Fully Online and Asynchronous -- No Set Meeting Days/Times

First Week Announcements:

Professor's Welcome Video

Professor's Class Welcome Message

First Week of Class Activity Checklist

Personal Introductions

Introduce yourself to fellow students the first week of class

Who are You?

- Your Name
- Academic focus
- Personal interests
- Why take Geology?
- Most memorable time you have had in nature or a place of geologic interest
- Image of Yourself

Post Your Personal Introduction on the Discussion Board by Thursday August 24th

Who am I?

I'm Professor Ray

- Instructor's Academic Background
- Instructor's Passion for Geology
- Instructor's Role in Classroom and Teaching Philosophy

Prof's Personal Background

I was born and raised in Southern California – so was my Dad!

Grew up in a family that loved the outdoors – spent lots of time at the beach, camping, hiking, hunting, fishing, and exploring.

Knew by 1st grade that I wanted to be an earth scientist.

Have lived within walking distance to ocean for the last 40 years.

Went into college wanting to become either an oceanographer and/or geologist, even though I first majored in marine engineering (What was I thinking? Submarines, not math!)

Spent a gazillion years as a student in college. Celebrated my free time between classes and semesters hanging out at the beach and in the mountains – mainly doing board sports and biking – surfing since I was 12.

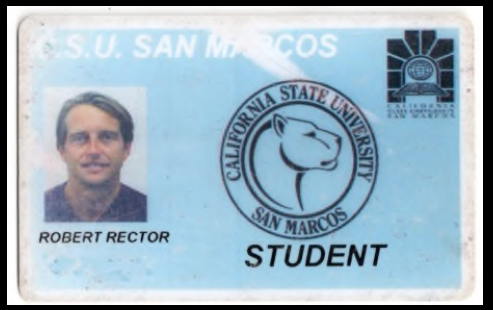
Still I a college guy, but teaching instead – and loving it.

Still trying to maintain the same lifestyle that I had in my 20's, except with less free time, more worries, slightly wiser, and moving a tad slower.

EARTH SCIENCE EDUCATION

California Single Subject Teaching Credential – Geosciences -
California State University, San Marcos, CA

- 35 graduate-level semester units completed; GPA = 3.9
- Cross-Cultural Language and Academic Development
- Additional emphasis of technology in the classroom



Earth Science Doctoral Program – Volcanism and **Tectonics**
University of California Riverside, Riverside, CA.

- 38 graduate-level semester units completed; GPA = 3.9
- Graduate Division Fellowship
- Mineralogical Society of America scholarship

Master of Science Degree – Igneous Petrology
San Diego State University, San Diego, CA

- 35 graduate-level semester units completed; GPA=3.9
- Achievement Rewards for College Scientists Scholarship

Bachelor of Science Degree - Magna Cum Laude - Geology
San Diego State University, San Diego, CA

- 172 semester units completed; GPA = 3.8
- Outstanding Senior Research Award--College of Sciences
- Outstanding Research Award—Department Of Geology

Engineering Undergraduate Program
California State University, Northridge, CA

- Marine Engineering emphasis

EARTH SCIENCE TEACHING BACKGROUND

University of San Diego, San Diego, CA **2007 - Present**

- Environmental Hazards Science Laboratory
- Earth Science Laboratory

MiraCosta College, Oceanside, CA **2004 - Present**

- Oceanography Lecture and Laboratory
- Online Geology

San Diego Miramar College, San Diego, CA **2003 - Present**

- Geology Laboratory
- Online Oceanography Lecture

San Diego Mesa College, San Diego, CA **2002 - Present**

- Online Geology Lecture
- Geology Laboratory

University of California Riverside, Riverside, CA **1994-1997**

- General geology, Historical geology, Mineralogy, Optical mineralogy, Igneous petrology, and Metamorphic petrology

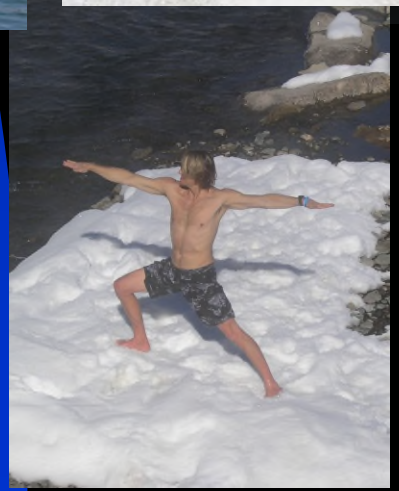
San Diego State University, San Diego, CA **1991-1993**

- General geology laboratory
- Advanced field geology course in Baja, Mexico.

Professor's Interests

Travel to Cool Places, Outdoor Adventure/Exploring and Hanging with Fun and Interesting Friends

Outdoor Sports



Wishing Everyone a Great Fall Semester!

What is Geology?

- ✓ Geology is the scientific study of the Earth
- ✓ An interdisciplinary science that embraces the traditional sciences

Hydrologic Studies

Volcanic Studies

Seismic Studies

Marine Studies

GEOLOGY -- an Interdisciplinary Science

Geology integrates many different types of geosciences

- **Mineralogy and Petrology** - the study of minerals and rocks
- **Marine geology** - the study of Earth's ocean bottom
- **Geochemistry**- study of chemical nature of rocks, minerals and fluids
- **Hydrology -** study of rivers, groundwater, flooding, dams
- **Volcanology –** study of the nature and distribution of volcanoes
- **Engineering geology-** design and construction of structures
- **Structural geology -** form and development of geologic structures
- **Geophysics –** study of forces and mechanisms of geologic phenomena
- **Environmental geology** – study of geological resources and pollution
- **Petroleum geology** – Locate. assess, and extract oil and natural gas

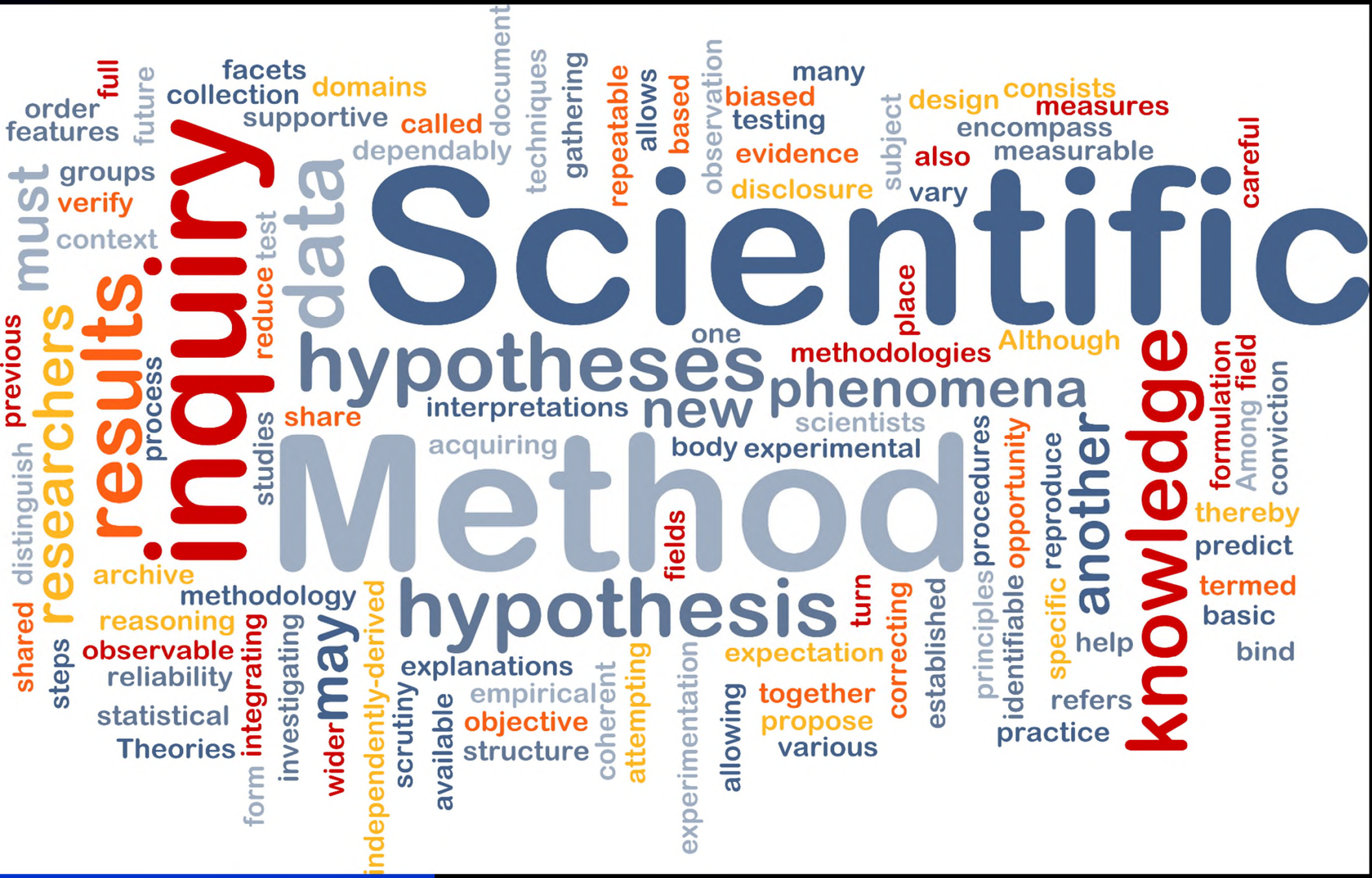
What Do Geologists Do?

Answer: …they *do* earth science.

Science defined: The investigation and acquisition of useful, reliable knowledge of earth's crust that is based on empirical observations (physical evidence).

- ✓ Earth scientists use a powerful way of thinking, that is rational, logical, and organized, called ***scientific thinking***.
- ✓ Intelligence, imagination, creativity, inspiration, and luck are other important attributes of scientific study.
- ✓ Earth scientists use a powerful approach to inquiry called the ***scientific method***.
- ✓ Central to science is community and peer review.

The Scientific Method – Heart of Science



Investigation and Application of the Scientific Method

Scientific Method

- O — OBSERVATION

- H — HYPOTHESIS

- T — TEST

Star	Color	Elements in Spectrum	Class	Other Observations
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

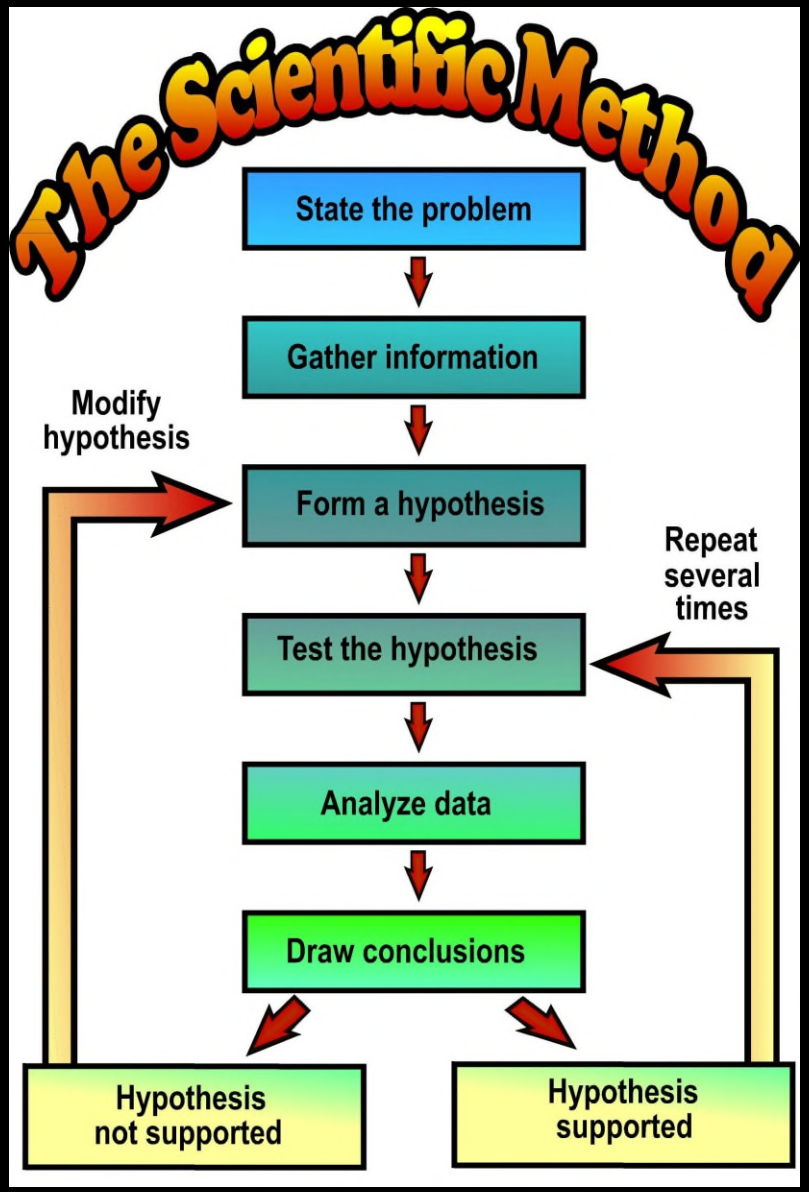
- A — ANALYZE DATA

- C — CONCLUSION

THE SCIENTIFIC METHOD

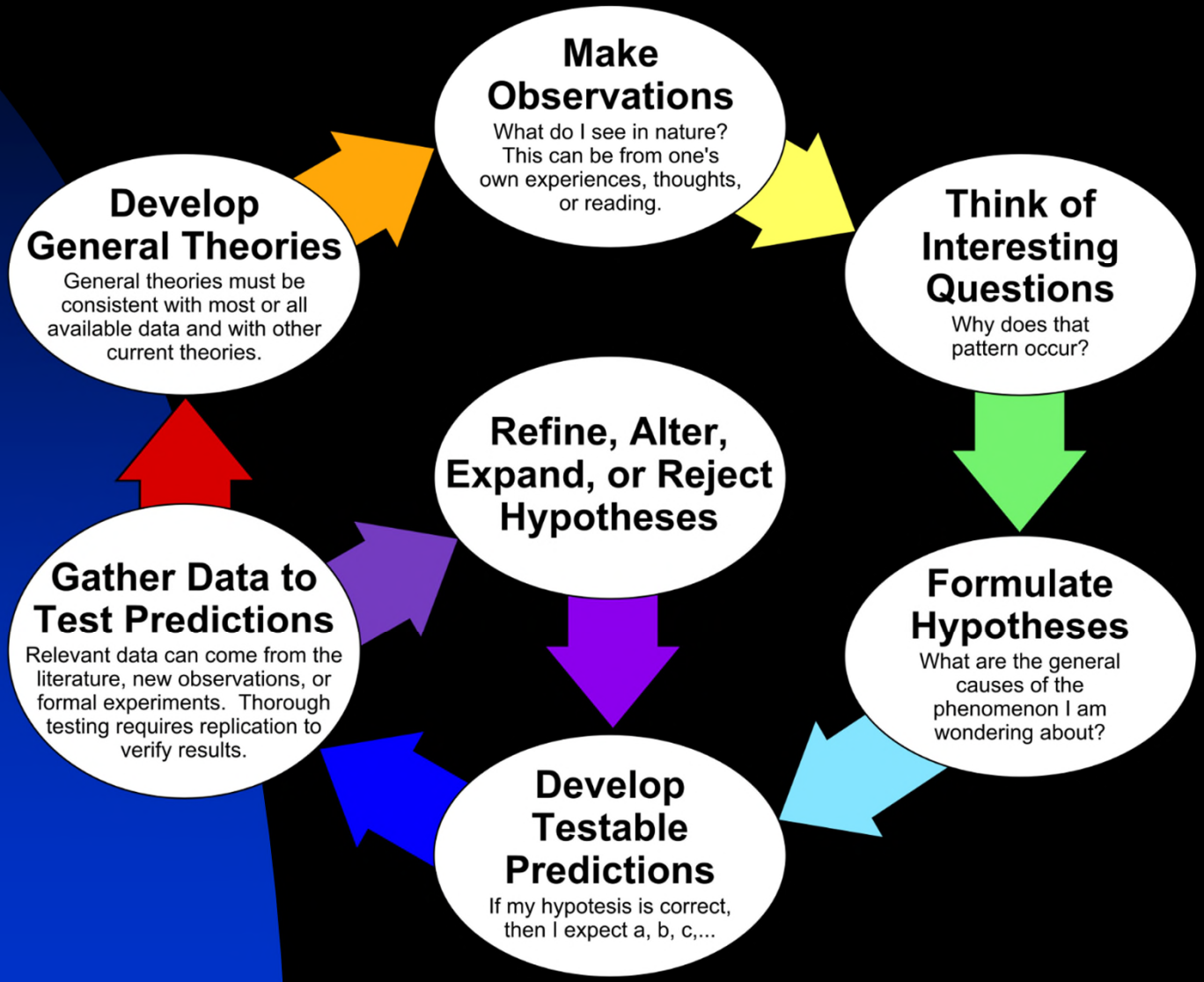
The Basic Components

- ✓ *Empirical Observations*
- ✓ *Questions / Problems*
- ✓ *Hypotheses / Models*
- ✓ *Predictions*
- ✓ *Tests / Experiments*
- ✓ *Analysis of Results*
- ✓ *Draw Conclusions*
- ✓ *Reevaluate Hypothesis*



Note: The scientific method is NOT a *recipe* – it's a *process*

Scientific Method is an Ongoing Process



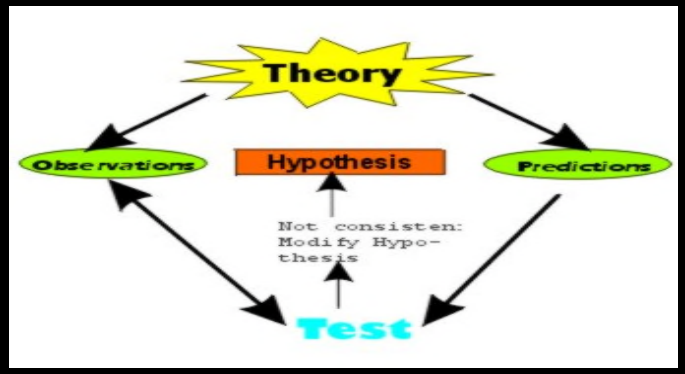
Scientific *Observations*

Making Observations

- There are two different types of observations – **quaLitative** observations and **quaNtitative** observations.

Hypotheses and Scientific *Testing*

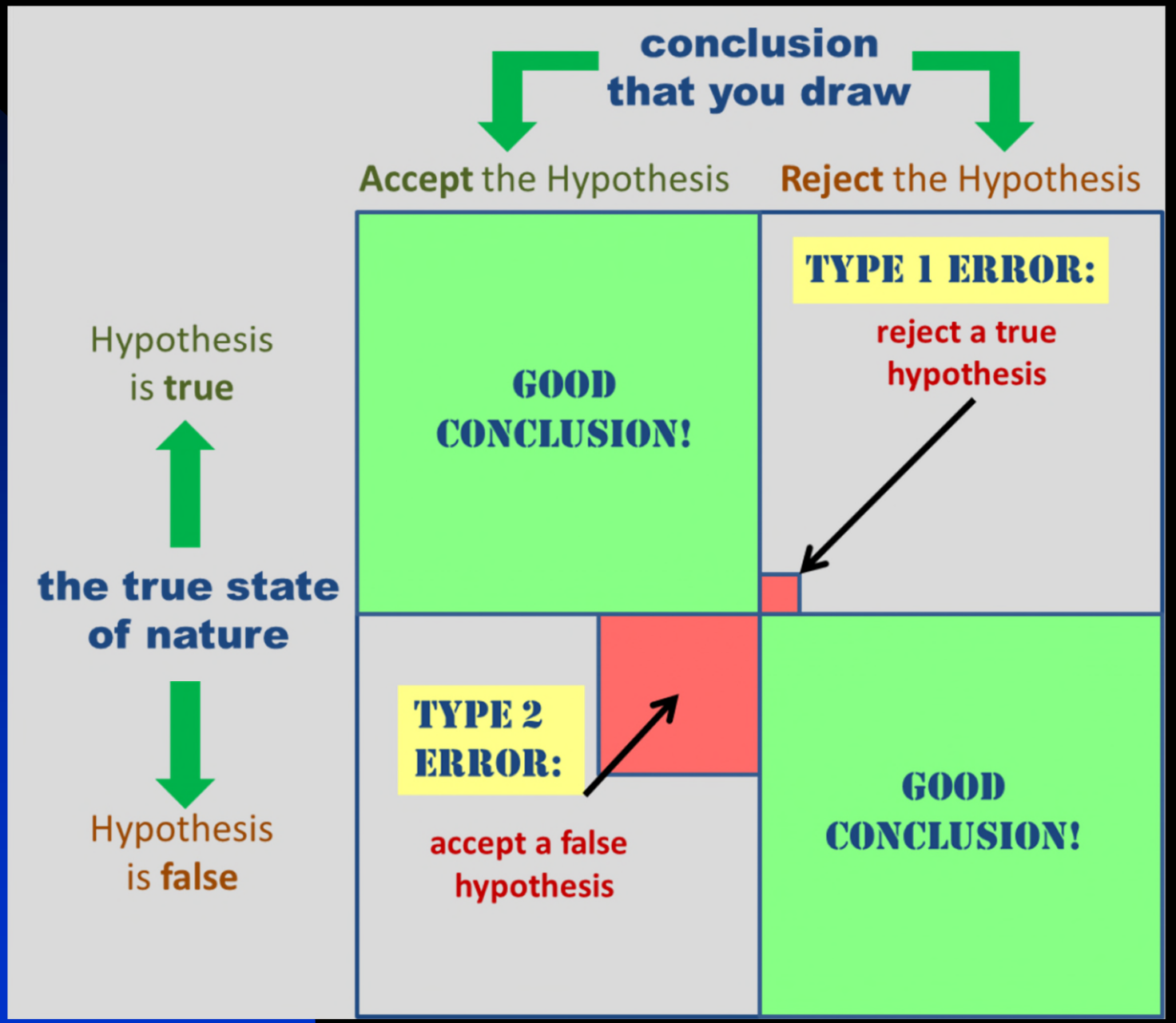
Observations and Predictions



Testing Hypotheses and Theories

1) A hypothesis is a simple explanation, model, or prediction of nature that requires testing (attempt to falsify or confirm).
2) Hypotheses are based on empirical physical evidence (data).
3) Hypotheses must be falsifiable (testable/predictable).
4) Hypotheses can never be proven as an absolute fact.
5) Hypotheses are always open to elimination or modification.
6) A theory is a broad, elegant, unifying explanation of a set of otherwise unconnected natural phenomena.
7) A theory is established by the interconnection (framework) of well-tested and confirmed hypotheses that are, in turn, supported by an enormous amount of physical evidence.

Testing Your Hypothesis

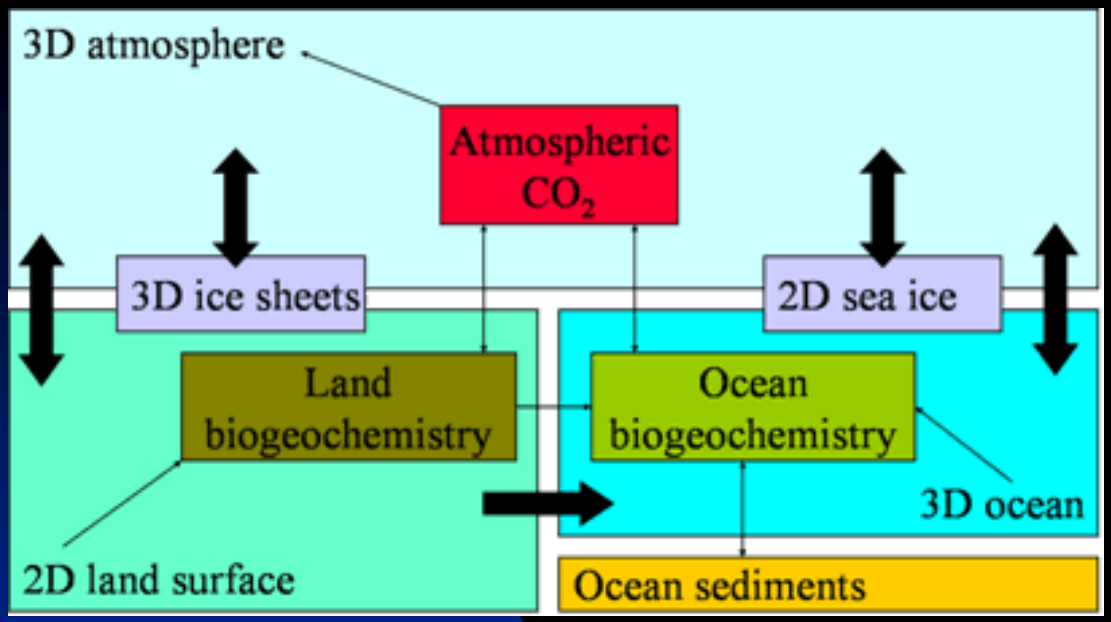


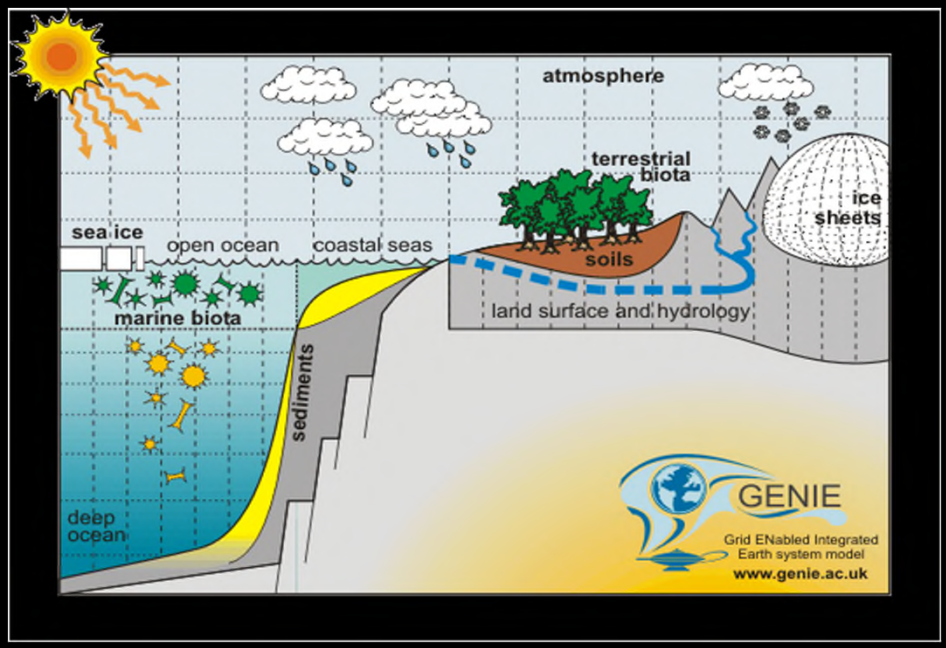
Scientific *Predictions*

Prediction

- A statement of what may happen in the future based on observations, data, experience or scientific reason

Scientific *Modeling* and *Predicting*





Purpose of Modeling: Understand and predict how parts of the Earth operate and interact with each other

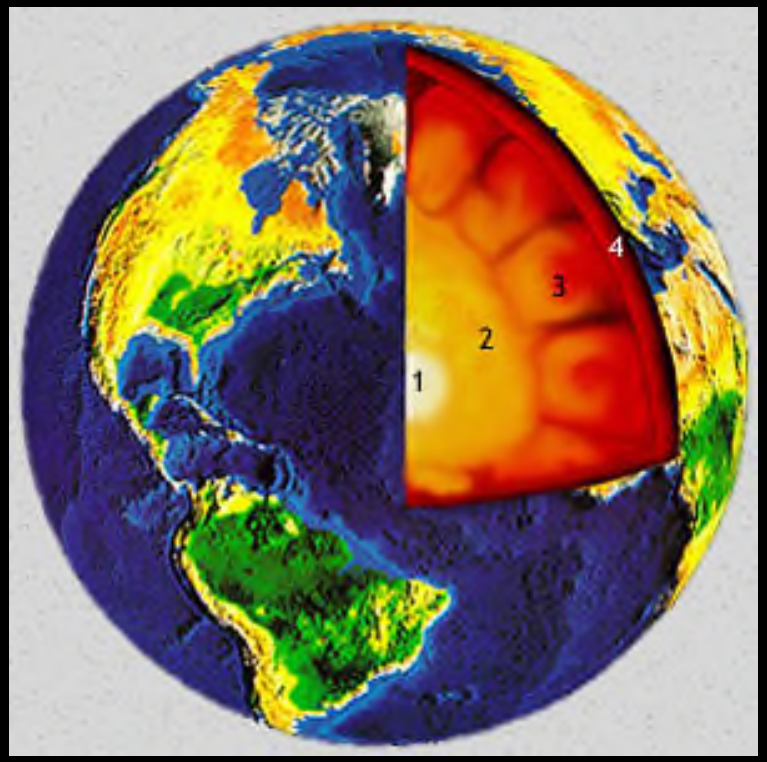
--- Start simple and get more complicated over time

--- Add more and more parameters over time

--- Test computer models with real historic data

---- Develop and refine models to predict future scenarios

Geology of Planet Earth

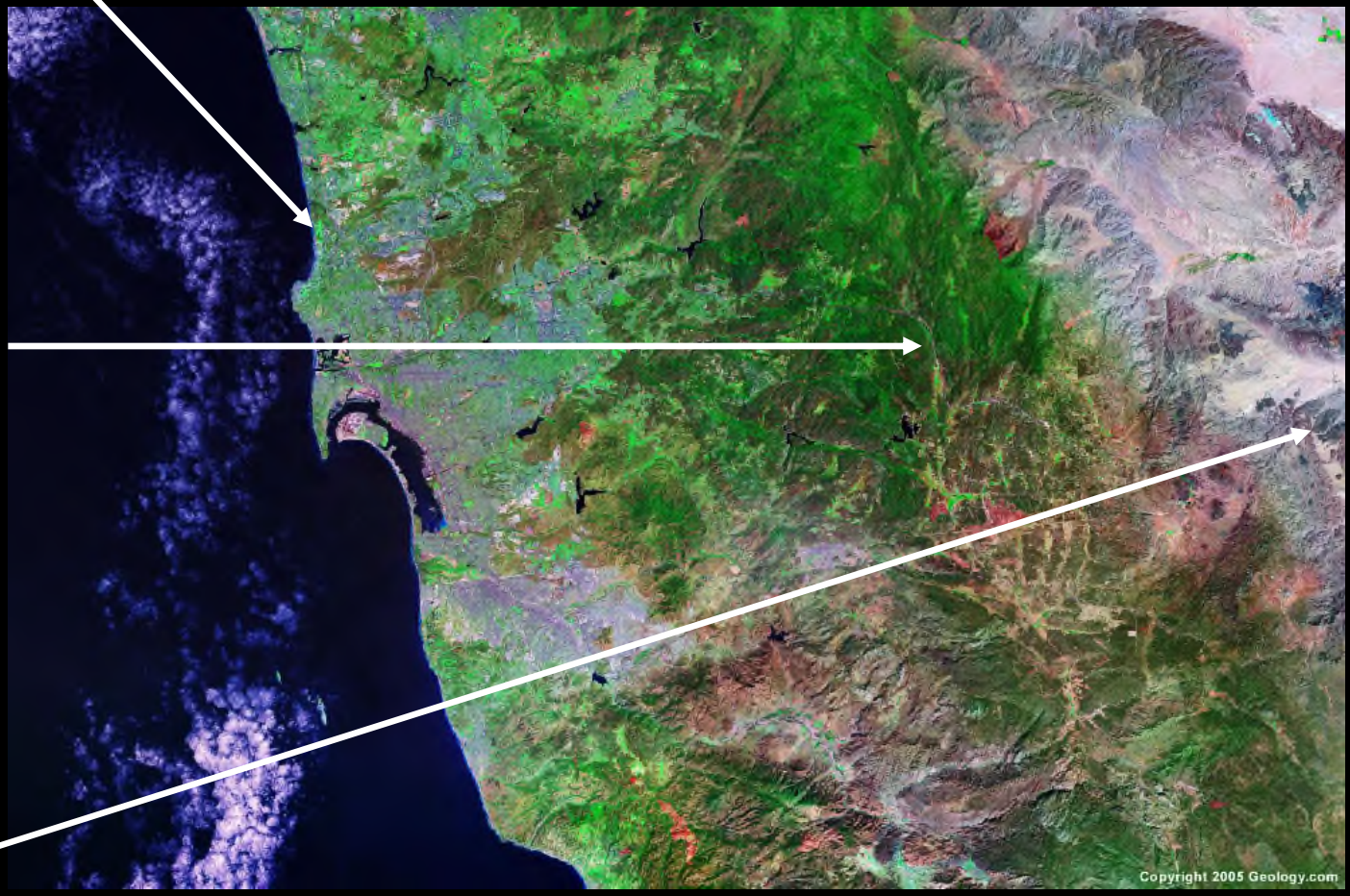


Geology of San Diego County

The Coastal Geology

Backcountry Geology

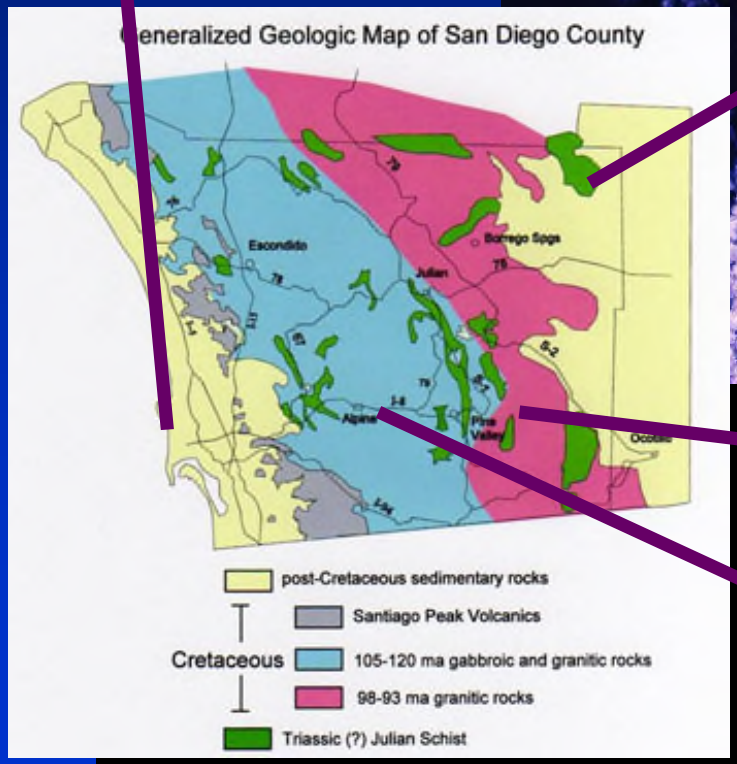
Desert Geology



Geology of San Diego

Metamorphic

Sedimentary



Igneous

Local Natural Hazards

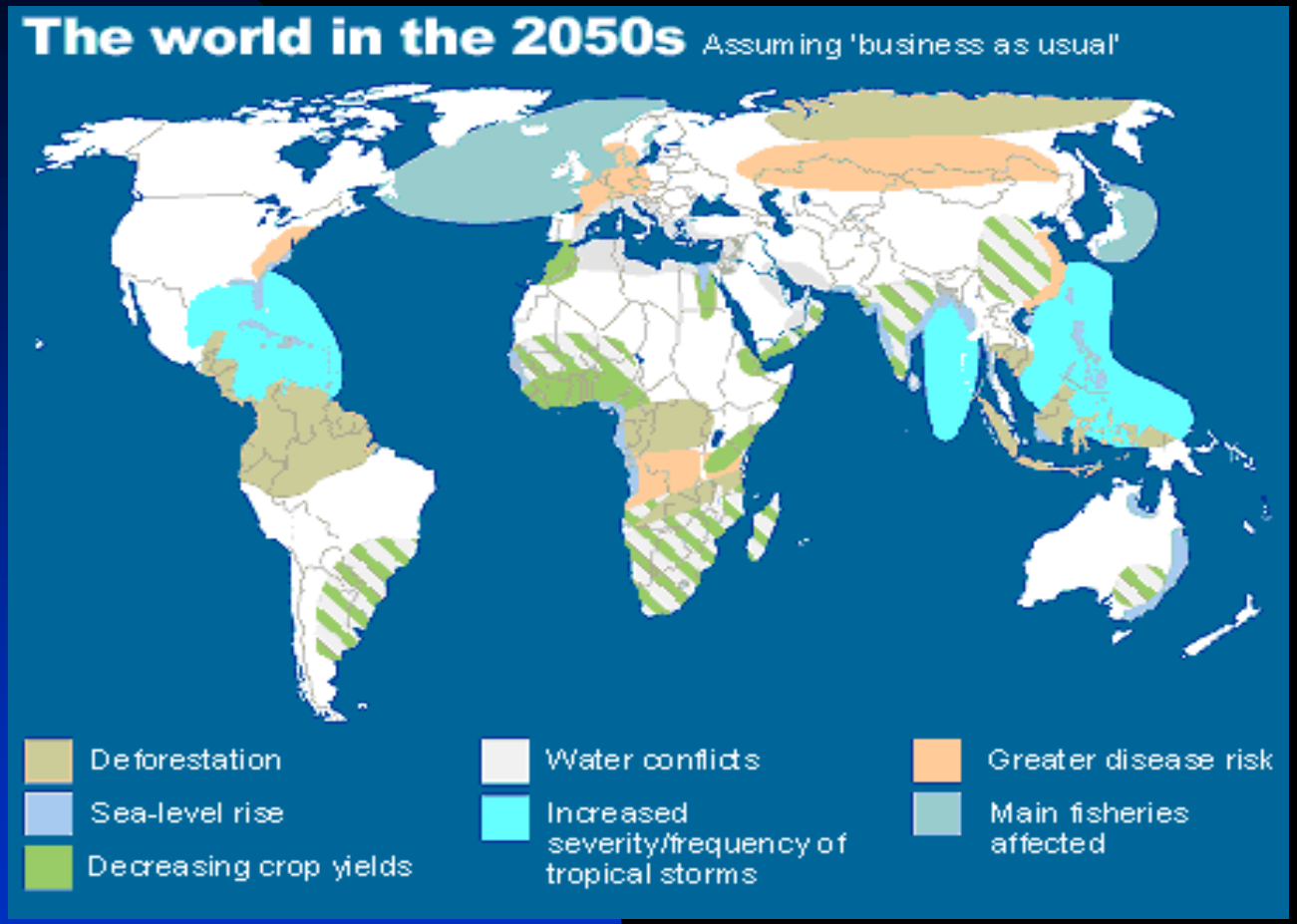

Homes on cliffs of Pacifica, CA

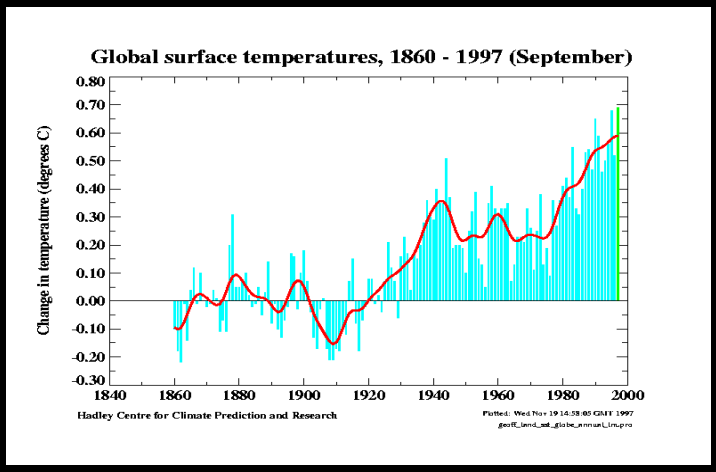
Question:

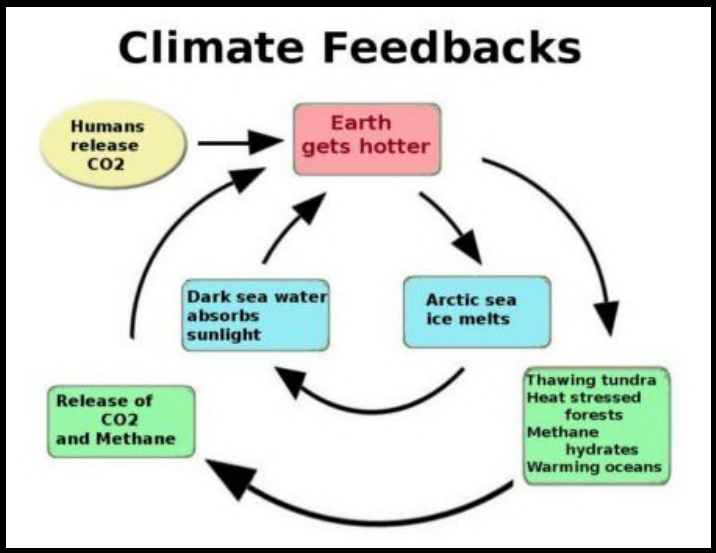
What other geologic hazards do we face in San Diego?

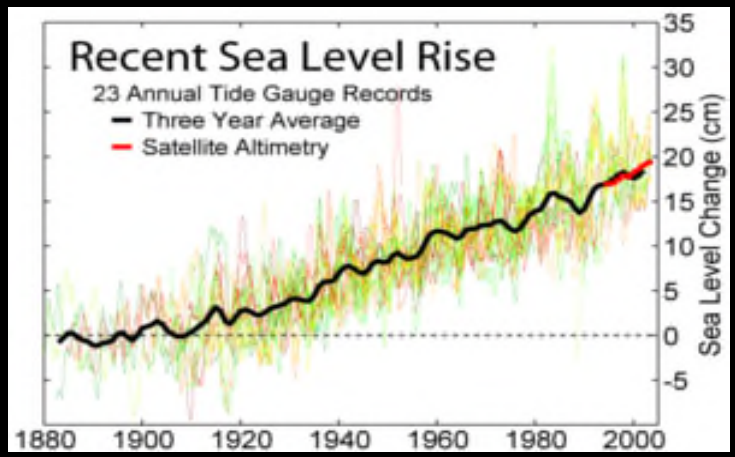
Climate Change:

The Ocean-Human Equation









Global Warming – Fact or Fiction?

SLOW OR ABRUPT CHANGE?

EARTH LITERACY

What All of Us Need to *Know* About the *Earth*

OLP #1: Earth has many geologic features that are forever changing.

OLP #2: Plate tectonics is the primary force shaping Earth's surface.

OLP #3: The ocean and atmosphere are the secondary forces that shape earth's surface.

OLP #4: The ocean makes the Earth habitable.

OLP #5: The Earth supports a great diversity of life and ecosystems.

OLP #6: Humans are inextricably interconnected with the planet.

EARTH LITERACY

An Earth-literate person:

1) Understands the essential principles and fundamental concepts about the functioning of the planet – the land, ocean and atmosphere, and the interior.

2) Can communicate about the Earth – its features and processes - in a meaningful way;

3) Is able to make informed and responsible decisions regarding the Earth and its resources; and

4) Respects, appreciates, and enjoys the land and ocean, and all its creatures.

Increase Our *Awareness & Understanding* of the Earth

Be ***Earth-Wise***… Think Globally – Act Locally

Care and Respect For Our Planet

She Takes Care for Us - We Need to Care for Her

Next Lecture

1) Origin of Solar System, Earth, Ocean, & Life

2) Overview of Earth Composition & Structure

3) Geologic Time and The Age of Earth

Homework for these topics **–**

1) Read and Study Chapter 1
2) View Earth Revealed Videos 1 & 2
3) Study Prof's Power Points and Lecture Outlines

Study the Instructor's Website @ www. geoscirocks.com