SUSTech Southern University of Science and Technology

南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

地球与空间科学系 DEPARTMENT OF EARTH AND SPACE SCIENCES

GGC5039 / ESS419

Academic Communication

Section 3-1: Writing and Publishing (IMRAD)

Instructor: Dikun Yang

Term: Fall 2020-2021

Outline

- Section 1: **Introduction** (2 hr)
- Section 2: **International communications** (2 hr)
- Section 3: **Writing and publishing** (8 hr) – Assignment 15%
- Section 4: **Presentations at conferences** (6 hr) – Assignment 15%
- Section 5: **Writing proposals and applications** (6 hr) – Assignment 15%
- Section 6: **Interviews** (4 hr) – Assignment 15%
- Section 7: **New media** (2 hr) – Assignment 15%
- Section 8: **Integrated practice** (2 hr) – Final defense/participation 25%

Types of Academic Writing

- Original research article
- Review, comment, letter, abstract
- Thesis, dissertation
- Technical report
- Book or book chapter

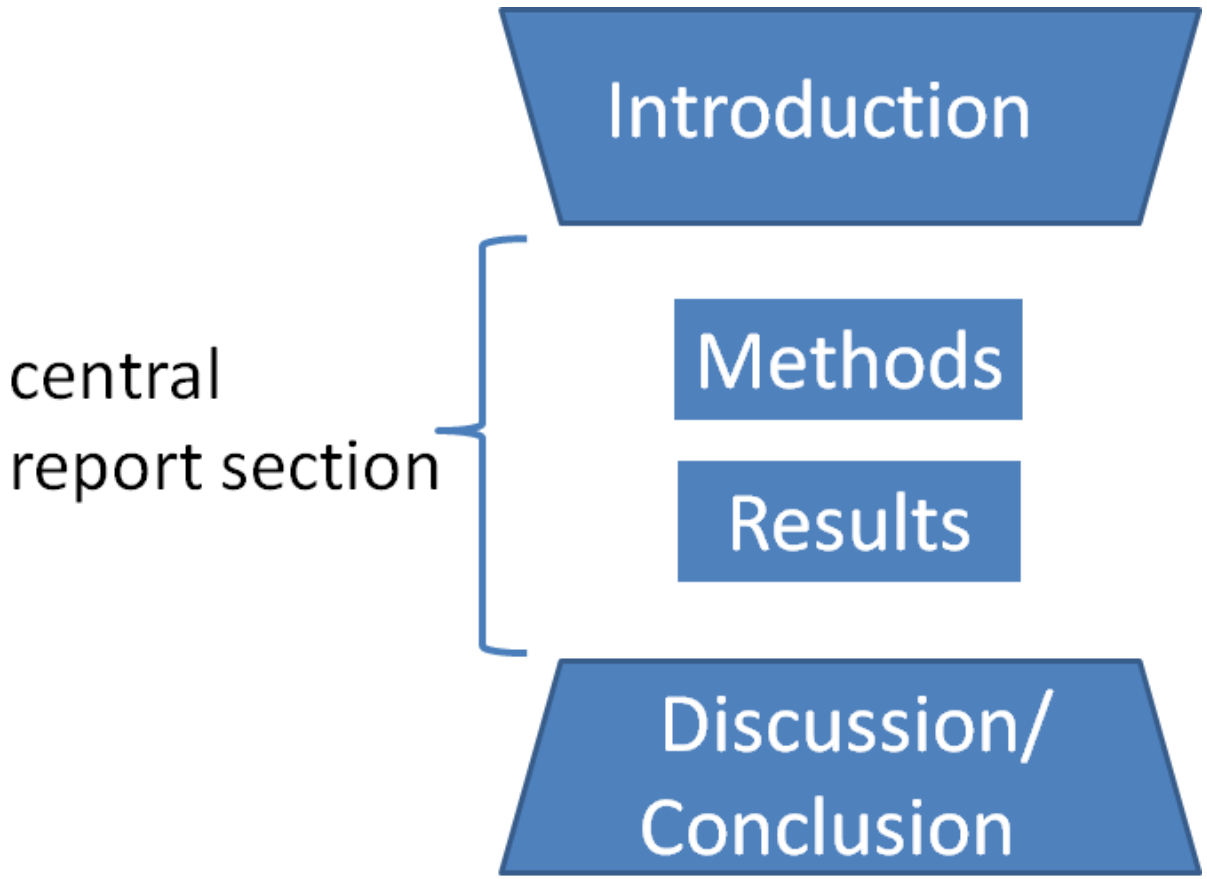
Which items listed above have you written before?

IMRAD

central report section

- Introduction
- Methods
- Results
- Discussion/ Conclusion

IMRAD as a Guiding Tool



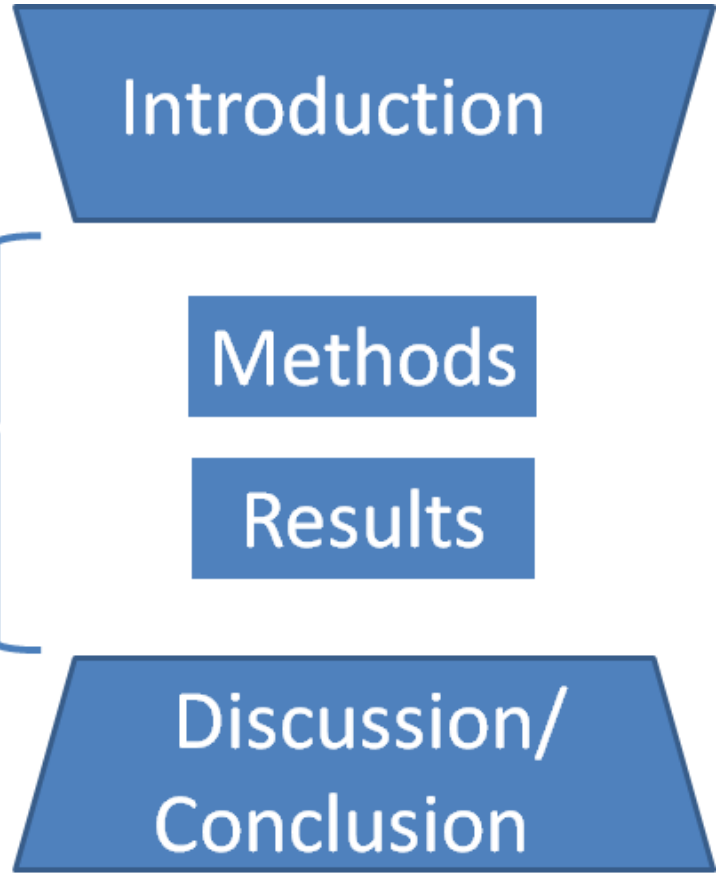
Why doing this research

What has been done

What did you find

How the findings can be important

IMRAD as a Guiding Tool



central
report section

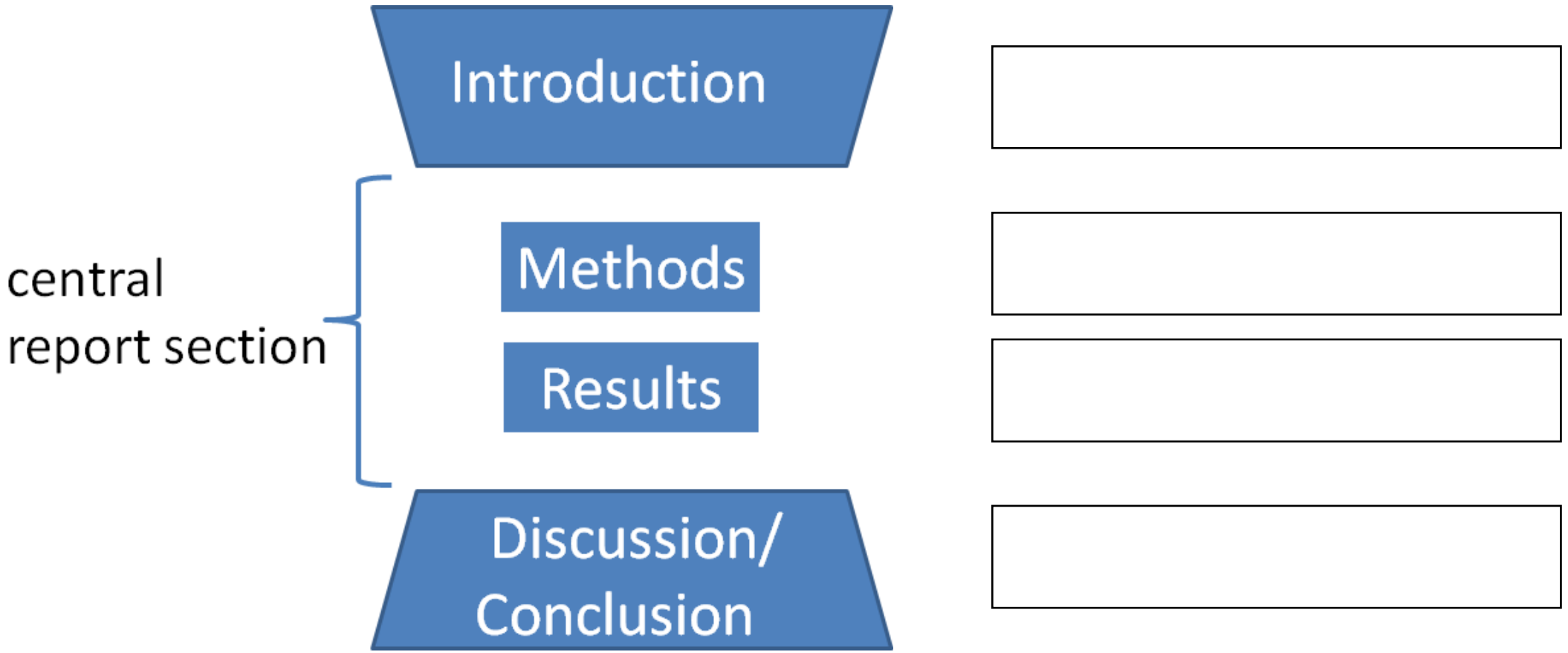
Mechanism of global warming

Install a thermometer in …

Very hot

Stop bathing!

IMRAD: Find a Topic and Fill the Blanks



Ingredients of a Good Paper

- Title
  - Length: Too short (general) or too long (specific)
  - Indexing: Searchable words; be careful about new terms or acronyms
  - Avoid non-informative words/expressions: On the study of …; A/an/the …
  - Syntax: Mechanism of suppressions of nontransmissible pneumonia in mice induced by Newcastle Virus; Isolation of antigens from monkeys using complement-fixation techniques
  - Assertive sentence title: Bathing accelerates the global warming
  - Running title/head:
  - Hanging title: Use of colon (Survey decomposition: A scalable framework for 3D controlled source electromagnetic inversion)

Ingredients of a Good Paper

- Authorship and address
  - Byline

Fast electrical imaging of injected fluid in hydraulic fracturing using a practical interactive parameter estimation method

Yinchu Li, Dikun Yang, Southern University of Science and Technology*

  - Order: More in “ethics in scientific publishing”
  - List of contribution
  - Format of name: Dikun Yang, D. Yang, D. K. Yang, Di Kun Yang, Yang Di-kun, Di-kun Yang…? Be consistent!
  - Affiliation
  - Physical address (formerly or presently)
  - Email address: institutional
  - First/corresponding author
  - ORCID: Open researcher and Contributor ID (orcid.org)

JGR Solid Earth

RESEARCH ARTICLE
10.1029/2019JB017835

Key Points:

- Teleseismic receiver functions beneath the Eastern Cordillera plateau of Colombia are consistent with the presence of major crustal thrusts and shear zones where shortening may have been accommodated
- A high seismic speed lower crustal layer beneath two Mio-Pliocence volcanic domes can be interpreted as magmatic underplating
- Mio-Pliocene volcanism in the Eastern Cordillera of Colombia may be related to slab flattening

Supporting Information:

- Supporting Information S1

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Deep Crustal Faults, Shear Zones, and Magmatism in the Eastern Cordillera of Colombia: Growth of a Plateau From Teleseismic Receiver Function and Geochemical Mio-Pliocene Volcanism Constraints

G. Monsalve[1], J. S. Jaramillo[1], A. Cardona[1], V. Schulte-Pelkum[2], G. Posada[1,3], V. Valencia[4], and E. Poveda[5]

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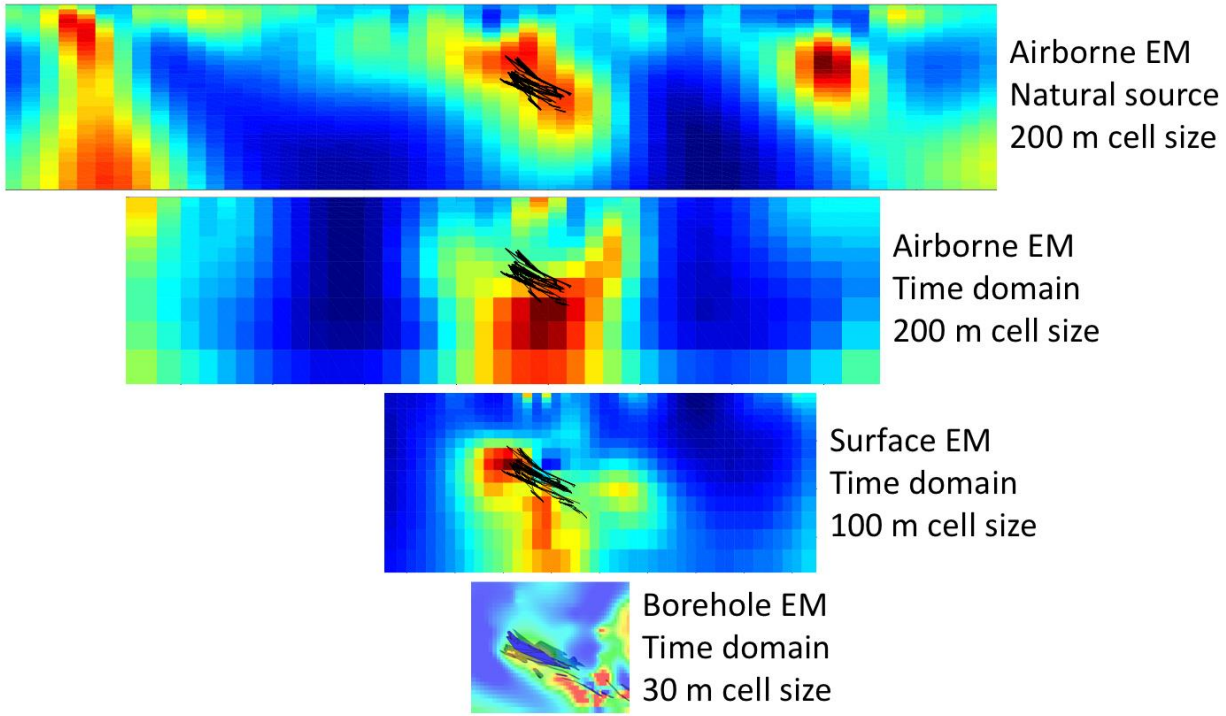
Abstract The Eastern Cordillera of Colombia, in the northern Andes, is an example of an orogen in which Mesozoic basins were compressed during the Cenozoic, forming a ~2,500-m-high plateau in its northern portion. Significant shortening and crustal thickening have contributed to the construction of the present topography and elevation. In this contribution, we combine the use of teleseismic receiver functions, Hf isotopes, whole-rock geochemistry, and U-Pb dating to help elucidate the main mechanisms that played a role in the crustal thickening and uplift of the cordillera. Receiver functions calculated for three

Ingredients of a Good Paper

- Abstract/summary
  - Miniature version of the paper
  - Word count
  - Same IMRAD structure
  - For readers to quickly capture the contents and judge whether they need to read the full text
  - Past tense
  - Text only: No tables, figures, formulas, citations
  - Informative abstract: Compressed actual contents
  - Indicative/descriptive abstract: Only structure and no specific contents

Ingredients of a Good Paper

- Abstract of abstract
  - Key words: Computer searchable; seeking reviewers
  - Brief statement of implications
  - Key points
  - Plain language summary
  - Graphic abstract



Ingredients of a Good Paper

- Introduction
  - Background and rationale
    - Unsolved scientific problem or technological challenges
    - Significance of this work
    - Previous works: Not just a pile of citations! Note the relations to the work presented
  - Present tense
  - Include information about methods and results (no surprise please)
  - Funnel: From general to specific
  - Set the assumptions, boundaries, constraints, domain of influence
  - List specialized terms and acronyms
  - Literature reviews
  - Drawing a pancake: A roadmap and a hook 

Ingredients of a Good Paper

- Methods/procedures
  - Support the validity of results: Reviewers may argue!
  - Repeatability of research
  - Technical specifications: CPU models in a computational paper; instrument sensitivity in an observational paper; source of rock samples…
  - Old or new method: citation, appendix, supplementary materials
  - Subheadings
  - Figures: Diagram, flow chart, photo
  - Table: List tedious details
  - Equations: Pay attention to details like sub/super-script, meaning of variables

Ingredients of a Good Paper

- Results
  - Representative data: Figures, tables, or choose appropriate statistical charts
  - Know your research field: What are the conventions or protocols
  - Past tense
  - Redundancy: “It is clearly shown in Figure 1 that the salinity of the river water increases with the distance.”
  - Figure: Avoid over-complex lines, curves and small fonts; smart use of captions

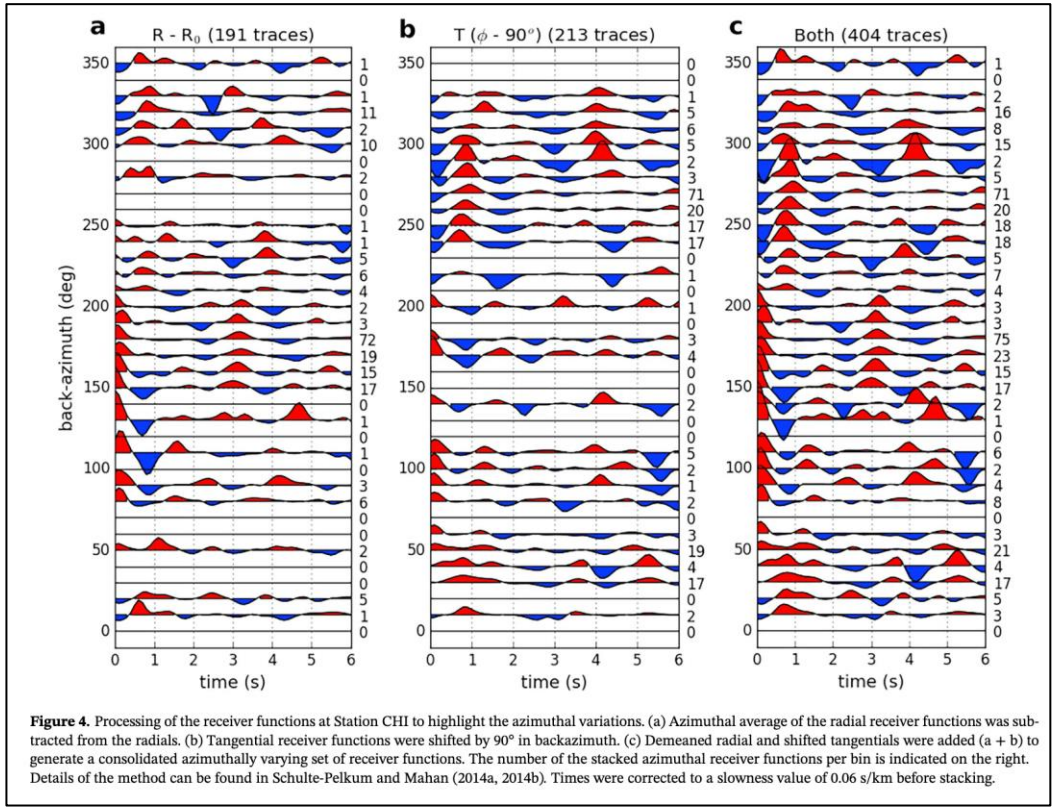


Figure 4. Processing of the receiver functions at Station CHI to highlight the azimuthal variations. (a) Azimuthal average of the radial receiver functions was subtracted from the radials. (b) Tangential receiver functions were shifted by 90° in backazimuth. (c) Demeaned radial and shifted tangentials were added (a + b) to generate a consolidated azimuthally varying set of receiver functions. The number of the stacked azimuthal receiver functions per bin is indicated on the right. Details of the method can be found in Schulte-Pelkum and Mahan (2014a, 2014b). Times were corrected to a slowness value of 0.06 s/km before stacking.

Ingredients of a Good Paper

- Discussions/Conclusions
  - Do you need a “discussion”? Principle, generalization, relationship, exception, implication, practicality… sometimes at the request of reviewers
  - Conclusions: Another “abstract” but with an emphasis on your own results (eat the pancake)
  - Reverse funnel: From specific to general, but be careful about what you claim
  - A template: Main discoveries/results -> position in the big picture -> significance and potential applications -> future research
  - Second mostly read part of a paper (after abstract)

Ingredients of a Good Paper

- Acknowledgements
  - Who needs to be thanked: helping experts, data providers, lab technicians, boat captain or truck driver who saved your data, funding sources, reviewers
  - Appear in the acknowledgement or the author list? (intellectually responsible)
  - Language: We thank … for …, We are grateful to …, … has provided helpful …

Ingredients of a Good Paper

- References
  - Published and unpublished materials: References or footnotes
  - Important and relevant references only!
  - Must be cited in the main text
  - Shows quality of research and sometimes political correctness
  - Format: Tedious but shows your professionalism
    - Name and Year
    - Alphabet-number
    - Citation order
  - You can use software but please proofread!

Assignment

- Write a short article with the topic you chose
- Use IMRAD to structure your paper
- Maximum 4 pages; minimum 1 page
- Find a template from a conference or a journal
- Make sure it contains as many ingredients above as possible
- Can be either in Chinese or English
- Graded based on format, not scientific contents
- Due data: The start of Section 4; please turn in printed copies