

**G433/533 Synoptic Meteorology and Climatology
Spring 2006
Prof. S.C. Pryor**

Paper Assignment

Instructions on paper

Distributed: 18th January (week 2 Wednesday)

Due date for paper: 20th March (week 11 Monday)

Due date for poster: When you present in class – on 17, 19, 24 or 26th April (week 15 or 16). This scheduling will be selected by random ballot!

In this paper I want you to synthesize the state of knowledge regarding the topic you select – so try to use up-to-date references and sources for your information. Imagine that you are trying to write a review paper for publication in – for example ‘Weather’ the magazine of the Royal Meteorological Society in the UK, or Science or Nature.

Your paper must be written in a format suitable for submission to a journal so it must have the following structure:

- (i) An introduction the basic issue or problem.
- (ii) A section describing the techniques being used to investigate the issue and major findings.
- (iii) A section documenting outstanding uncertainties (what remains unknown?).
- (iv) A discussion and conclusions section where you BRIEFLY summarize the material presented.
- (v) A list of references cited. Try to avoid the WWW and instead use books and journal articles that have been reviewed (*remember any idiot can post anything on the WWW!*)
- (vi) Figures and tables.

Your paper should be typed and should not exceed 10 pages (doubled-spaced, 12 point font). By imposing this page limit I am encouraging you to write succinctly! You may attach **up to** 4 pages of figures and tables (each must have a caption and be labeled sequentially). You must explicitly refer to each of them in your text and use them to illustrate important points within your summary (AND remember to cite the sources).

Remember to use the Web of Science (you can link there to do literature searches from: <http://www.libraries.iub.edu/index.php?pageId=1046>, by selecting Web of Knowledge).

Notes:

- Use sections and sub-sections to give the paper a good structure. Each section and sub-section should have a coherent theme
- All cited works must be referenced. (i.e. you must provide a reference list showing the details of the papers, books or WWW sites you refer to within the text). Examples of how to cite sources for material:
 - e.g. According to Pryor et al. (2003) the frequency of wind speeds in excess of 15 m s⁻¹ increased during 1950-2000 OR The frequency of wind speeds in excess of 15 m s⁻¹ increased during 1950-2000 (Pryor et al. 2003).
 - The reference list should have references in the following format: Pryor S.C. and Barthelmie R.J. (2003): Long term variability of flow over the Baltic. *International Journal of Climatology* **23** 271-289.
- If the statement you are making is not common knowledge then it must be accompanied by a source.
- If you are directly quoting then the quote must be enclosed in quotation marks (“”) and be accompanied by a citation if you do not do this then you are guilty of plagiarism
- Use graphics and tables and refer to them explicitly in your text. Proof read your paper and make sure that you do explicitly refer to all tables and figures you include and to provide a caption for each table and figure (describing what it shows and where it came from).

Make sure that your paper is quantitative and written and presented in a scientific style.

Grading key for your paper: (it contribute 15% to your final grade)

- Topic (Was it appropriate and relevant to the course):10%
- Structure (Was the paper well structured, was the flow of information logical and systematic): 10%

- Scientific content (Did the paper present interest and appropriate material and demonstrate a comprehension of the topic): 40%
- Clarity of presentation (Grammar, style): 10%
- Figures and tables (Are they appropriate, relevant and used to good effect within the paper): 20%
- References (Do they demonstrate you did research to find innovative sources of information): 10%

Instructions on poster

To transform your paper into a poster (of dimensions no more than 3 ft by 4 ft) you will need to synthesize material and present only reduced version of the entire study. There are several examples of posters in the Student Building that have been produced by faculty, graduate students and undergraduate students. Use these as a template for your poster.

In a poster you are trying to use principally figures to step the audience through the state of knowledge on a topic – so for example, if you choose hurricanes as your topic then you might want to show an example of the structure of a hurricane, maybe an example of hurricane tracks, perhaps a graph displaying the inter-annual variability, etc... i.e. start with thinking what information do I want to display? Then get the graphics that show that information and then fill in text around those figures.

Make sure:

- The title and authorship are clear.
- The poster can be read from a distance of at least 2 ft. This means LARGE font – nothing smaller than 14 pt and you should probably use 16 pt! (make sure that this also applies to axes labels on diagrams).
- You keep your text brief.
- All the figures and tables are necessary and legible. Type the text. Keep figures and tables simple. All lines should be heavy and dark. Number and arrange illustrations and tables in the sequence in which they will be viewed.
- If you reproduce figures from other sources make sure they are legible and that you cite the source.
- You provide documentation of your data sources.
- All references that you cite are listed in abbreviated form on the poster.

Grading:

The poster counts for 15 % of your final grade. The poster will be graded on:

- The presentation. (25 %)
- The scientific content. (75 %)

Other notes:

- *With your permission I shall ask the library staff to display the posters at the end of the semester.*
- *Recall you will also have 15 mins in class to describe your poster.*

Instructions on poster presentation

In 15 mins you should be able to synthesize what your poster shows – i.e. you should orally step your audience through the poster by saying a few words for each text box and each figure.

Grading:

The poster presentation counts for 10 % of your final grade. This grade will be allocated based on how well you were able to communicate your poster contents

Example key references to assist you in researching your chosen topic.

Topic	Suggested starting points.
Remote sensing	<ul style="list-style-type: none"> • An introduction to Satellite Image Interpretation (1997): Conway et al. • Images in weather forecasting (1995): Bader et al. • Satellite Meteorology (1995): Kidder and Haar • Bluestein: A review of ground-based, mobile, W-band Doppler-radar observations of tornadoes and dust devils. Dynamics Of Atmospheres And Oceans 40 (3): 163-188 2005 • Sauvageot: Rainfall Measurement By Radar - A Review. Atmospheric Research 35 (1): 27-54 1994 <p>Journals: Bulletin of the American Meteorological Society. Remote Sensing of the Environment.</p>
Cyclogenesis	<ul style="list-style-type: none"> • Djuric • Synoptic-Dynamic Meteorology in Midlatitudes (Vol II) (1993): Bluestein • Atmosphere, Weather and Climate (1992): Barry and Chorley • Mid-latitude Weather Systems (1994): Carlson. <p>Journals: Weather, Quarterly Journal of the Royal Meteorological Society.</p>
Weather prediction	<ul style="list-style-type: none"> • From Turbulence to Climate (1998): Beniston • Physics of Climate (1992): Peixoto and Oort <p>Journals: Weather and Forecasting.</p>
Thunderstorms	<ul style="list-style-type: none"> • Djuric • Storms (1990): Cotton • Dudhia (1996/7) Part I: Weather 51 p371-376. Part II: Weather 52 p2-7 • Bulletin of the American Meteorological Society (1990) 71 p994-1005 <p>Journals: Bulletin of the American Meteorological Society, Weather and Forecasting, Weatherwise.</p>
Tornados	<ul style="list-style-type: none"> • Tornado Alley (1999): Bluestein • Significant Tornadoes 1680-1991 (1993): Grazulis • Scientific American August 1995. • Weatherwise April/May 1995. • Bulletin of the American Meteorological Society (1991) 72 p1270-2. • Bluestein: A review of ground-based, mobile, W-band Doppler-radar observations of tornadoes and dust devils DYNAMICS OF ATMOSPHERES AND OCEANS 40 (3): 163-188 JUL 2005 <p>Journals: Bulletin of the American Meteorological Society, Weather and Forecasting, Weatherwise.</p>
Hurricanes	<ul style="list-style-type: none"> • Hurricanes of the North Atlantic (1999): Elsner and Kara • Bulletin of the American Meteorological Society (1992) 73 p1352-1364 • Weatherwise (1989): 42 p262-6 • Weather (1997): Hurricanes Hardly Happen. November. (just for fun!) • Links to climate change – see a series of articles published in the journal Nature during 2005. • For seasonal forecasts look up the author: William Gray <p>Journals: Weatherwise, Tellus</p>