

AOSC200: Weather and Climate Discussion

Sections 0101, 0102

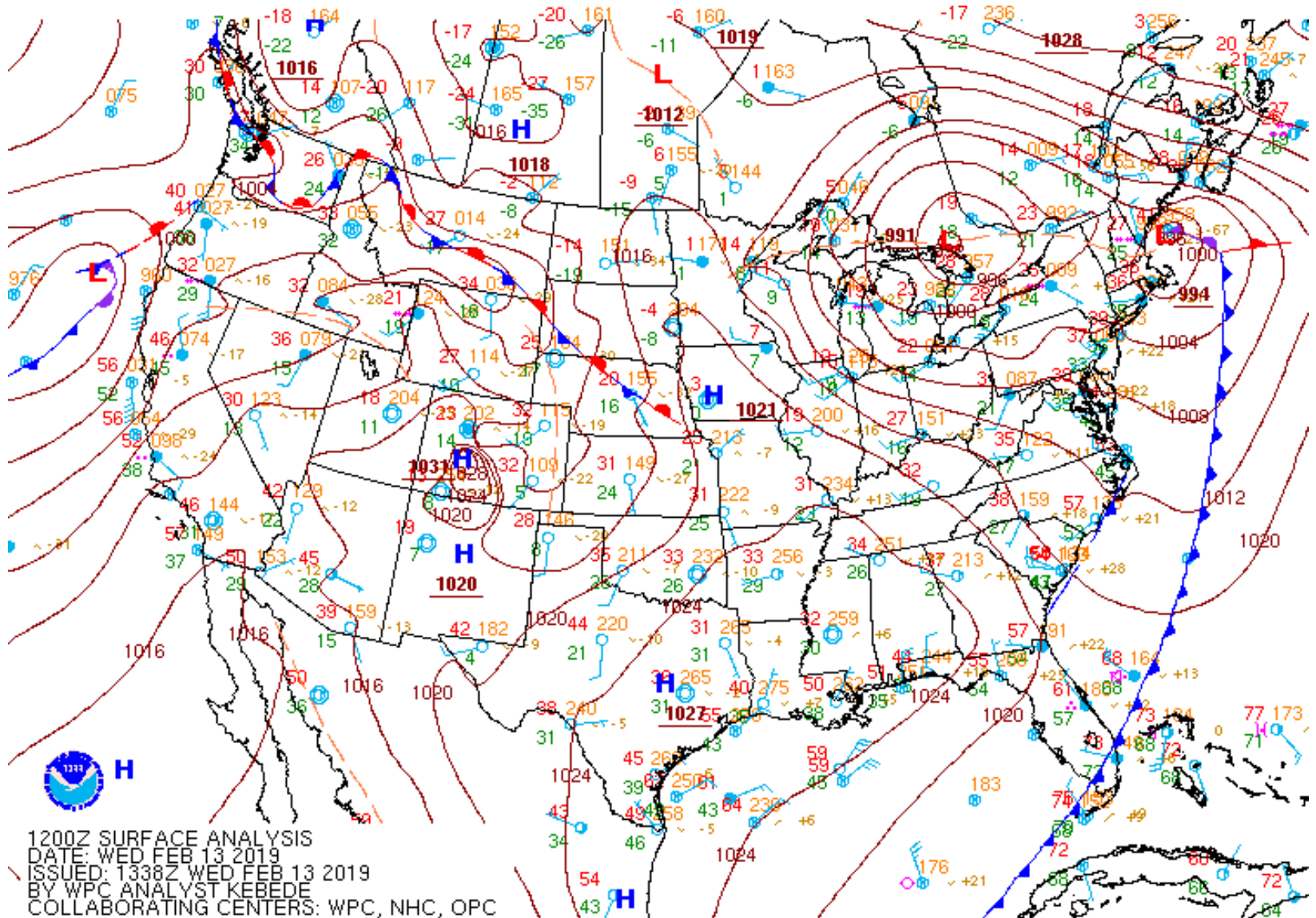
TA: Agniv Sengupta

13 February, 2019



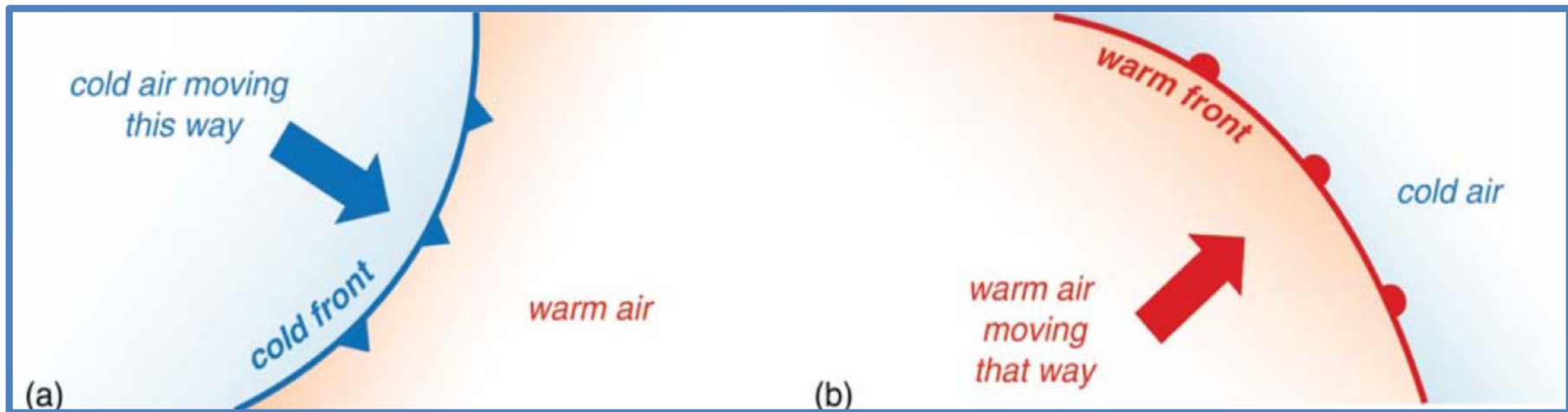
DEPARTMENT OF
ATMOSPHERIC &
OCEANIC SCIENCE

Today's weather map



Review of course material

Temperature Fronts:

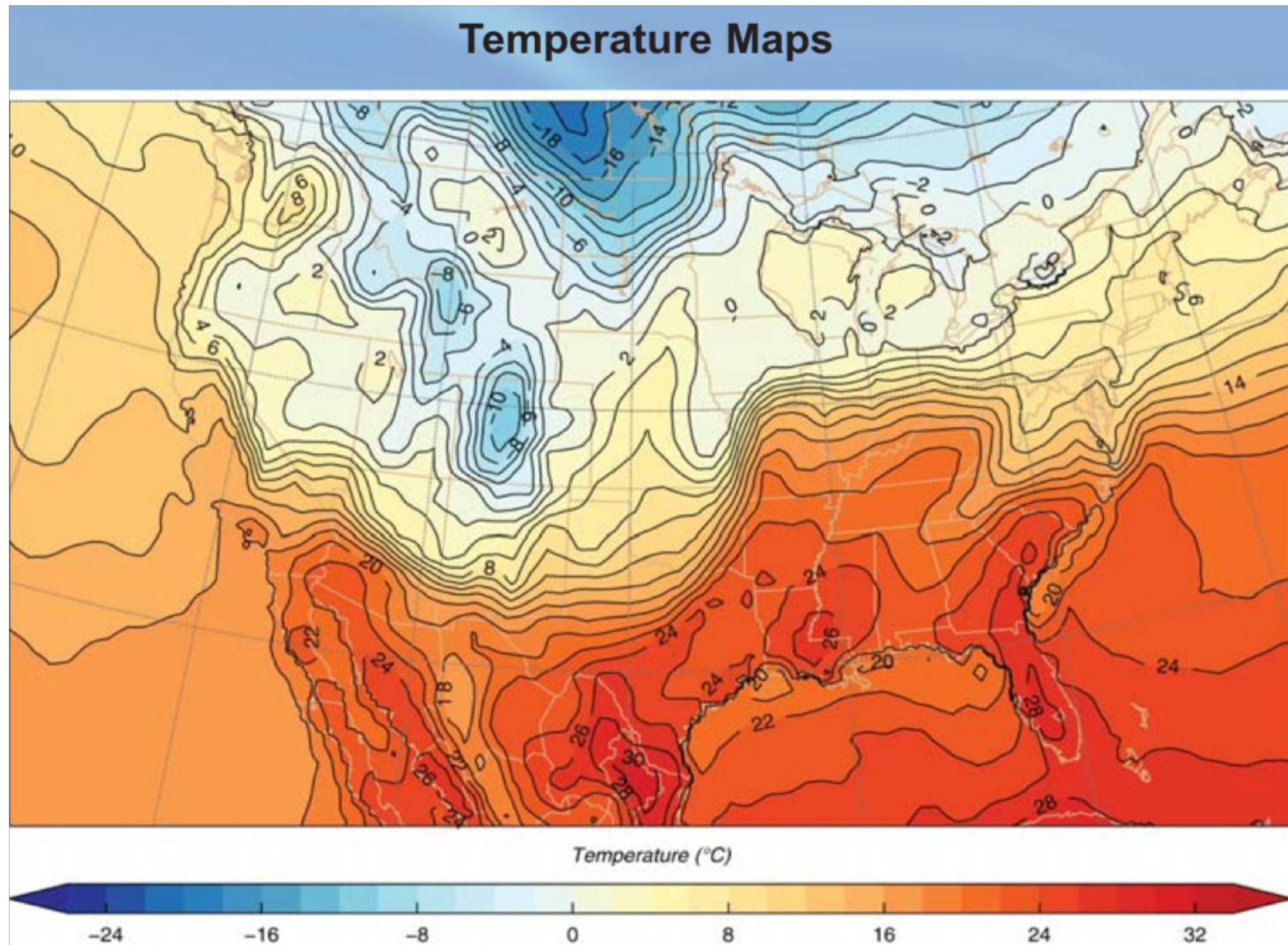


- **Warm Front:** a region where warm air is replacing cold air
- **Cold Front:** a region where cold air is replacing warm air

Thus, we expect to find *warm air* behind a warm front and ahead of a cold front. Similarly, we expect to find *cold air* behind a cold front and ahead of a warm front

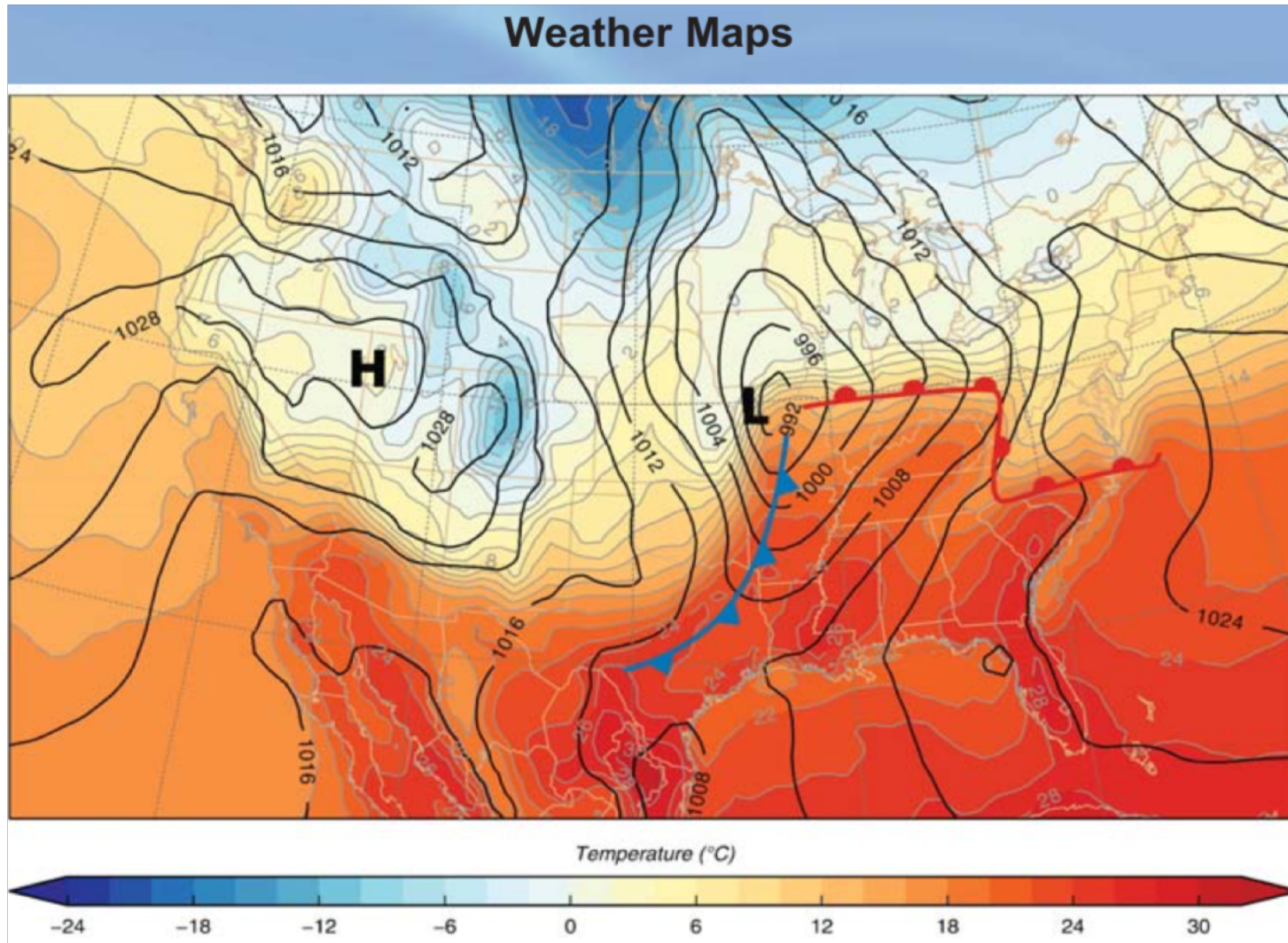
Review of course material

Locate the **warm** and **cold** air fronts!

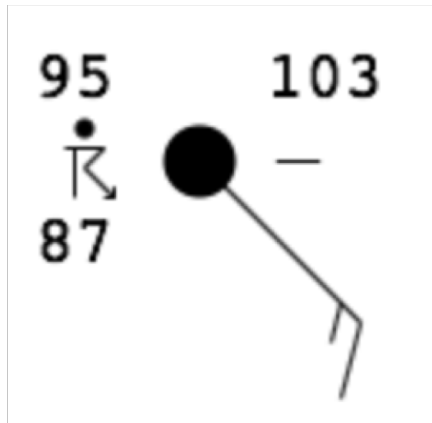


Review of course material

Locate the **warm** and **cold** air fronts!



Weather Station Model: Practice#2



1) What is the **Temperature**?

- **95°F**

2) **Dew Point**?

- **87°F**

3) **Wind Direction**?

- **SE**

4) **Wind Speed**?

- **15knots**

5) **Cloud Cover**?

- **Overcast**

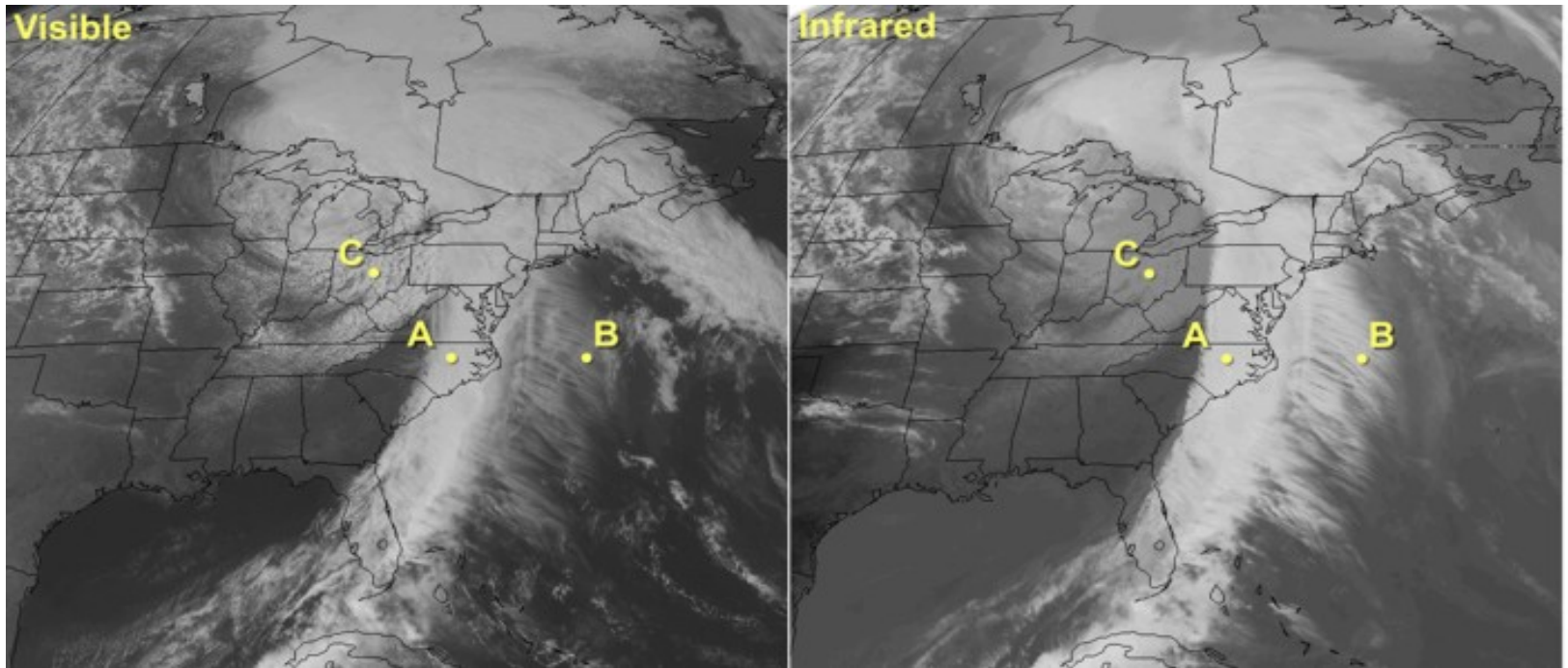
6) **Pressure**?

- **1010.3 hPa or mb**

7) **Current Weather**?

- **Thunderstorm**

Satellite Imagery: Visible and IR



Visible imagery (reflected solar radiation) distinguishes between thick and thin clouds, while **infrared imagery** (emitted thermal energy) distinguishes between high and low clouds.

Location A: bright on both visible and IR imagery → what is the weather at A ?

Location B: not as bright on visible, bright on IR imagery → ?

Location C: somewhat bright on visible and not bright on IR imagery → ?

Satellite Imagery: Water Vapor



This is a “false color” image. Water vapor absorbs and emits energy. You can tune an instrument to only “see” the wavelengths where water vapor absorbs and emits energy

Atmospheric Composition

TABLE 1.1 Composition of the Atmosphere near the Earth's Surface

PERMANENT GASES			VARIABLE GASES			
Gas	Symbol	Percent (by Volume) Dry Air	Gas (and Particles)	Symbol	Percent (by Volume)	Parts per Million (ppm)
Nitrogen	N ₂	78.08	Water vapor	H ₂ O	0 to 4	
Oxygen	O ₂	20.95	Carbon dioxide	CO ₂	0.040	400*
Argon	Ar	0.93	Methane	CH ₄	0.00018	1.8
Neon	Ne	0.0018	Nitrous oxide	N ₂ O	0.00003	0.3
Helium	He	0.0005	Ozone	O ₃	0.000004	0.04**
Hydrogen	H ₂	0.00006	Particles (dust, soot, etc.)		0.000001	0.01–0.15
Xenon	Xe	0.000009	Chlorofluorocarbons (CFCs)		0.00000002	0.0002

Topic of the Day (TOD #1) – 5 points

Name:

Topic of the Day #1

How many extra credit points will be made available this semester?

Please *write your name* on the top of the page.

What is your TA's name and what section of AOSC200 are you in?

You are welcome to look at the course syllabus or class website to answer the questions on TOD #1.

What is the date and time of the final exam you will be taking?

How many admission ticket grades will be dropped?

What is the penalty for excessive cell phone use that is distracting to other students and/or the professor?

Project#1: Teams (Section 0101)

Team A	Team B	Team C	Team D	Team E	Team F
Anagnostopoulos-King, Vasi	Anderson, Steven Scott	Daitch, Bradley Ian	Dang, Kalista Ngoc Tram	Galonek, Cameron Nicholas	Joyce, Taylor Donnell
Ardizzone, Emma Barton	Coyle, Katherine Emiko	Jayachandran, Kartik	Koenig, Lauren Rachel	Park, Lydia Soo	Liddy, Colin S
Maimon, David S	Jarvis, Lara Camille	Metzbower, Ashley Nicole	Miller, Kyle Joseph	Protin, Abigail Jane	Putro, Marchelino
McIlvain, Katelyn Meera	Negus, Solomon	Sajid, Hajra	Perlstein, Matthew Benjami	Twillman, Andrew Carson	Spurrier, Lydia Valdez
Reott, Benjamin Clayton	Silberman, Zachary Gage	Yosef, Samuel N	Vandenberghe, Julian Rene	Taylor, Aaron James	Tangreti, Sophia Rose

Project#1: Debate Topics (Section 0101)

Debate#1 (Teams A & B): *Should there be criminal penalties for incorrect forecasters?*

Team A (PRO): *There should be criminal penalties for forecasters who incorrectly forecast the weather.*

Team B (CON): *There should not be criminal penalties for forecasters who incorrectly forecast the weather.*

Project#1: Debate Topics (Section 0101)

Debate#2 (Teams C & D): *Extreme Weather Events more prevalent in modern times*

Team C (PRO): *Events of extreme weather are now occurring more frequently and this is a sign of global climate change*

Team D (CON): *Extreme weather of frequency comparable to today has always existed. We are in an era where we can record and monitor it better, so we are aware of more events.*

Project#1: Debate Topics (Section 0101)

Debate#3 (Teams E & F): *Geoengineering as a solution to weather/climate problems*

Team E (PRO): *Geoengineering should be used to force the atmosphere to behave in a way humans prefer.*

Team F (CON): *Geoengineering the atmosphere should be banned, similarly in the way chemical and nuclear weapons are banned.*

Group Project#1: Teams (0102)

Team A	Team B	Team C	Team D	Team E	Team F
Shah, Rushabh Umesh	Roberts, Nicholas Andrew	Chien, Luoh-Chyi Angela	Guan, Nicholas Jabao	Jha, Rianna Nira	Sowers, Erika Lynn
Caine, Benjamin Paul	Carroll, Andrew Patrick	Husain, Ali Reza	Miller, Brendan Patrick	Carney, Christopher Ryan	Amenda, Laura Josefa
Conley, Brooke Elisabeth	Birney, Madeleine Angeline	Guidera, Joseph Connor	Liao, Logan Y	Polushina, Veronika Nikola	Do, Richard
Bevans, Amanda Taylor	Kaczmarek, Natalie Ann	Kwon, Heejin	Petrauskas, Jack Steven	Melendez, Gabriella Noelle	Riley, Emily McKenna
Spencer, Logan Richard	Duster, Nicole Marelle	Guloy, Jullian Ernest	Buckson, Landen Edward	Corazzata, Daniel	Wunderlick, Julia Grace

Project#1: Debate Topics (Section 0102)

Debate#1 (Teams A & B): *Geoengineering as a solution to weather/climate problems*

Team A (CON): *Geoengineering the atmosphere should be banned, similarly in the way chemical and nuclear weapons are banned.*

Team B (PRO): *Geoengineering should be used to force the atmosphere to behave in a way humans prefer.*

Project#1: Debate Topics (Section 0102)

Debate#2 (Teams C & D): *Extreme Weather Events more prevalent in modern times*

Team C (PRO): *Events of extreme weather are now occurring more frequently and this is a sign of global climate change*

Team D (CON): *Extreme weather of frequency comparable to today has always existed. We are in an era where we can record and monitor it better, so we are aware of more events.*

Project#1: Debate Topics (Section 0102)

Debate#3 (Teams E & F): Assume climate change is NOT due to human activity.

Team E (Reason): *Climate change is due to a naturally-occurring physical process – changes in Earth's albedo.*

Team F (Reason): *Climate change is due to a naturally-occurring process – shifts in the Earth's orbit.*

Group Project #1: Debate

- ❑ It is important that the **PRO and CON sides** of a particular debate **coordinate** amongst themselves and decide upon their supporting/opposing arguments for the introduction, sub-topics A, B, and C, and the conclusion.
- ❑ Exchange contact information and **set up meetings with your fellow team members as well as with the opposition team**. Keep record of each team meeting on the Group Contract Form.
- ❑ **Practice your 2.5 minutes speech** not only with your team but also with the other team.

Project #1: Important Dates

- Before Presentations

- 2-20

- ½ way Peer Evaluations due (submission via ELMS)
 - Group Rough draft due (submission via ELMS)

- Presentations

- 3-6 (1st Debate)

- All groups should be prepared; annotated bibliography, prepared statement by each team member must be turned in

- 3-13 (2nd Debate)

- 3-27 (3rd Debate)

- Individual Write-ups due
 - Final Peer Reviews Due

Project #1: Group Rough Draft

- ❑ Every team member needs to submit a Rough Draft – 6 paragraphs in total
- ❑ 1st paragraph: include Team Name, Team Members, Debate Topic, Position (PRO/CON), summary of your team members' roles.
- ❑ 2nd – 6th paragraphs: Each team member outlines their individual research and argument either in favor/opposition of the topic with at least 2 citations in MLA format per member.
 - 2nd paragraph: First supporting/opposing speaker (INTRODUCTION)
 - 3rd paragraph: Second supporting/opposing speaker (Sub-Topic A)
 - 4th paragraph: Third supporting/opposing speaker (Sub-Topic B)
 - 5th paragraph: Fourth supporting/opposing speaker (Sub-Topic C)
 - 6th paragraph: Fifth supporting/opposing speaker (CONCLUSION)
- ❑ Work as a group to finish, each person needs a submission (*everyone in the same group can submit the same document*)
- ❑ Include your MLA format bibliography either at the end (labeling which citation belongs to which speaker) or list your citations after each paragraph.

Thank
you



Questions ?

Email me: agnivs@umd.edu