Predictive Science for the Earth System and Solar-Terrestrial Phenomena

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Outcomes from discussions (1)

• How to make the best use of our increased computing: should we target resolution or additional feedbacks/components or uncertainty (ensemble)? What is the right balance (depends on target/science driver)?

• How well do we understand and represent feedbacks (drivers of limitations; examples from drought forecast/solar physics)?
Outcomes from discussions (2)

• How do we quantify and propagate uncertainty? This is true for IC/observation/processes/forcings (solar variability at various timescales)/model parameters ...

• Data assimilation is a key component to prediction

• Studying the gap between weather and climate: seasonal/annual/decadal predictions (initial value/boundary-value problem)? There is a lot of basic science that is needed!
Outcomes from discussions (3)

• What is the information content of prediction? How is this information used (example of tornadoes/drought)?

• Verification and evaluation of predictions! How limited are we by observations? A national center should be able to go out and determine what’s important, what scales a forecast is most sensitive to, what observational systems would have most impact, etc. (humidity measurements/solar proxies)
Outcomes of discussions (4)

• Group at NCAR – linked to the community - devoted to predictability science, generic to models/observations/verification (interaction of scales/parameterizations)