

# Framework for Organizing Synthesis Efforts of the NACP

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# What it is

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- Near-term synthesis products needed by NACP funding agencies
- Draft guidance for detailed plan
- Goal: Framework document describing structure and expected outcome of specific synthesis activities

# The Process

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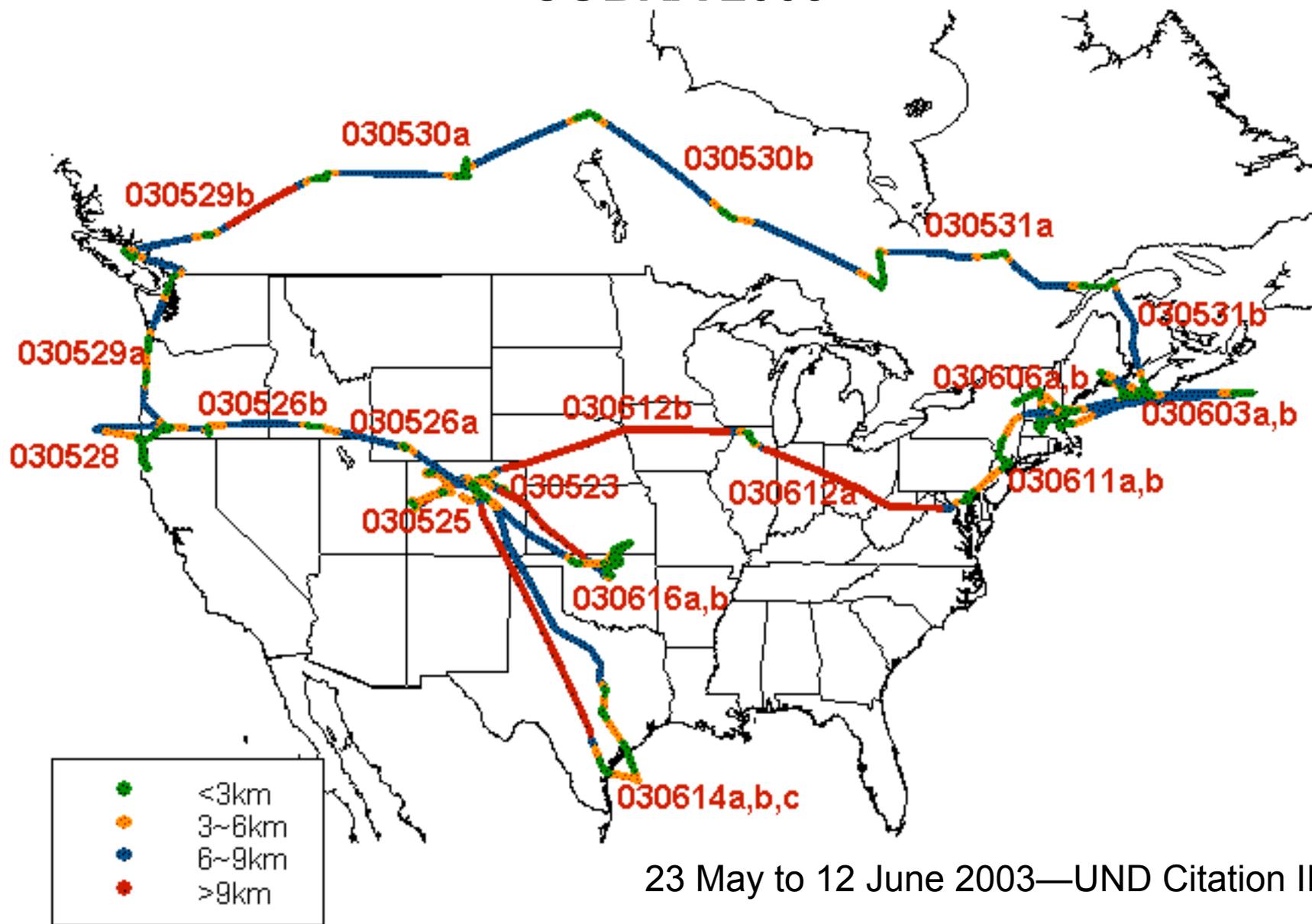
- NACP Synthesis Task Force work with NACP PIs to revise/expand draft
- Relate the activities to science questions in NACP Science Implementation Strategy
- ID existing and new resources needed to complete the synthesis activities
- Circulate completed draft to NACP community for comment
- Expanded task force review and revise
- Present to CCIWG with needs assessment

# Theme 1: Diagnosis

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- **Existing:** Carbon Tracker, other inverse modeling efforts, flux distribution methods, inventory methods, remote sensing methods
- **Needed:** Uncertainty analysis comparing various methods. Project to link terrestrial and coastal processes.
- **Example SQ:** What is our current best estimate of time and space varying fluxes and associated uncertainty? ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{CO}$ )

# Methane sources over North America from COBRA 2003



23 May to 12 June 2003—UND Citation II  
320 flasks, measured at NOAA/Boulder

# Theme 2: Attribution/Processes

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- **Existing:** Measurement/modeling studies focused on individual or several process components; improvements of one or more models
- **Needed:** Evaluation of multiple measurement and modeling approaches for: disturbance, climate effects, landuse decision-making. Assessment of interactions between disturbance, climate, landuse. CO<sub>2</sub> as an additional driving factor.
- **Example SQ:** How are process controls on the carbon cycle *currently* varying across the continental scale US? How do different methods contribute to differences between regions?

# Theme 3: Prediction

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- **Existing:** Forward models - multiple spatial/temporal scales (site to globe, months to centuries)
- **Needed:** Uncertainty analysis comparing various models, measurements at multiple scales (hindcasting analysis). Continental-scale multi-century forward integrations (consistent driving data). Subset global coupled simulations
- **Example SQ:** What are our current best estimates of the continental-scale climate-carbon feedback parameters? How do they vary in space and time?

# Theme 4: Decision Support

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- **Existing:** Landuse decision modeling, carbon sequestration estimates, sector commodity and econometric models
- **Needed:** Identification of policy-relevant questions requires collaboration with policy community. Packaging results for policy-makers/stakeholders, coordination with Integrated Assessment Modeling/scenario development community (landuse, energy policy). Coupling of economic models to forward models for scenario generation
- **Example SQ:** How does conversion of landuse for biofuel production affect regional/continental carbon budgets, atmospheric CO<sub>2</sub>? Constraints on detection based on measurement/modeling uncertainty?

# What now?

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- Timeline
- Summary of interim synthesis products
- ID existing and new resources needed to complete the synthesis activities
- Who is going to do this?