

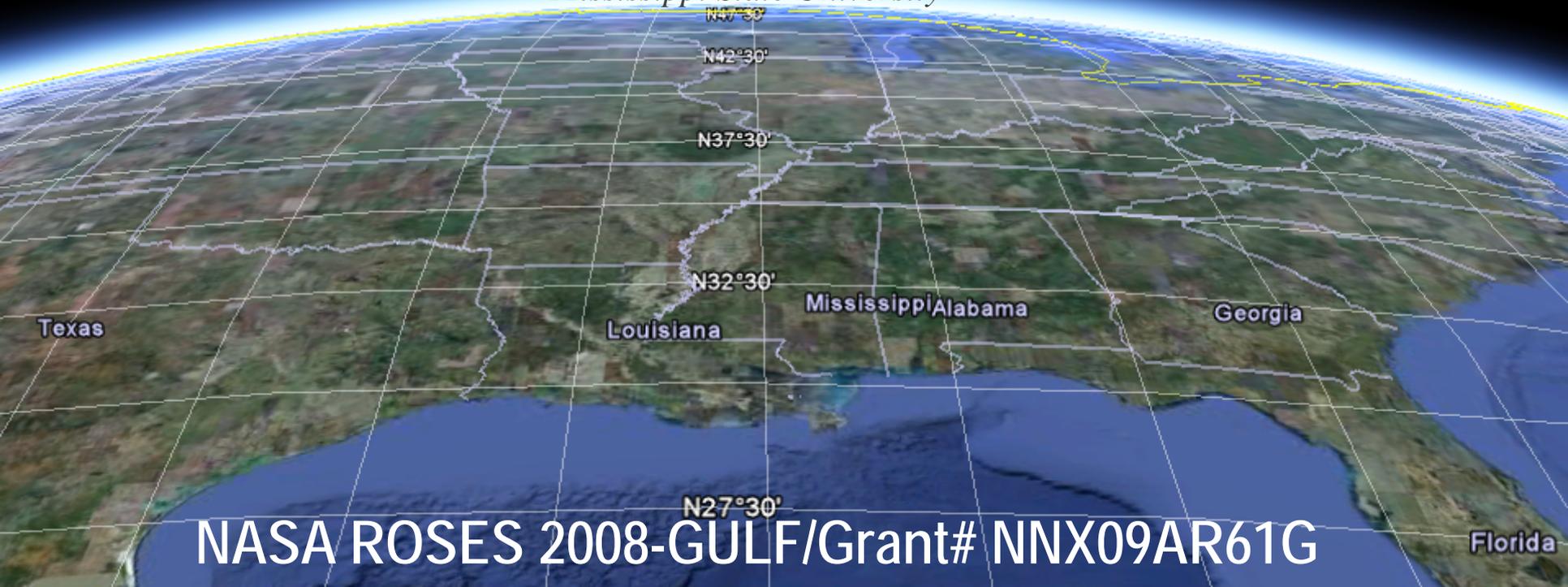
Sustainable Management of Coastal Forest Ecosystems under a Changing Climate in the Northern Gulf of Mexico

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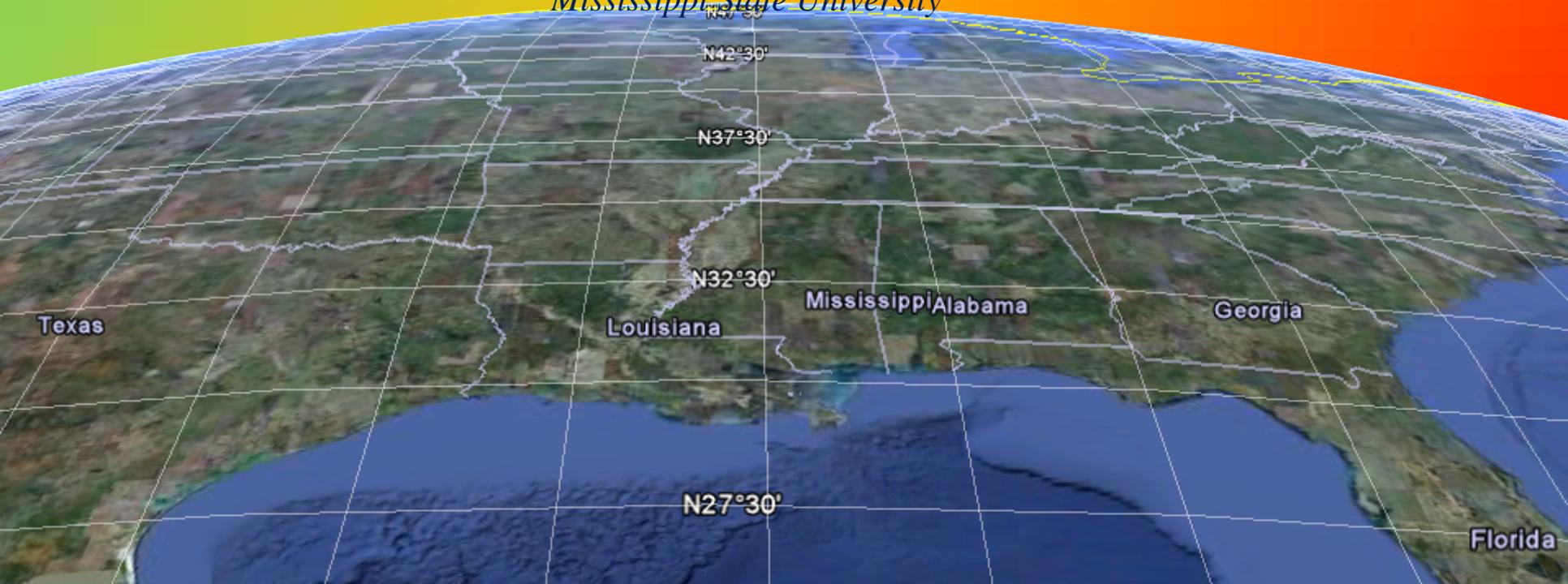
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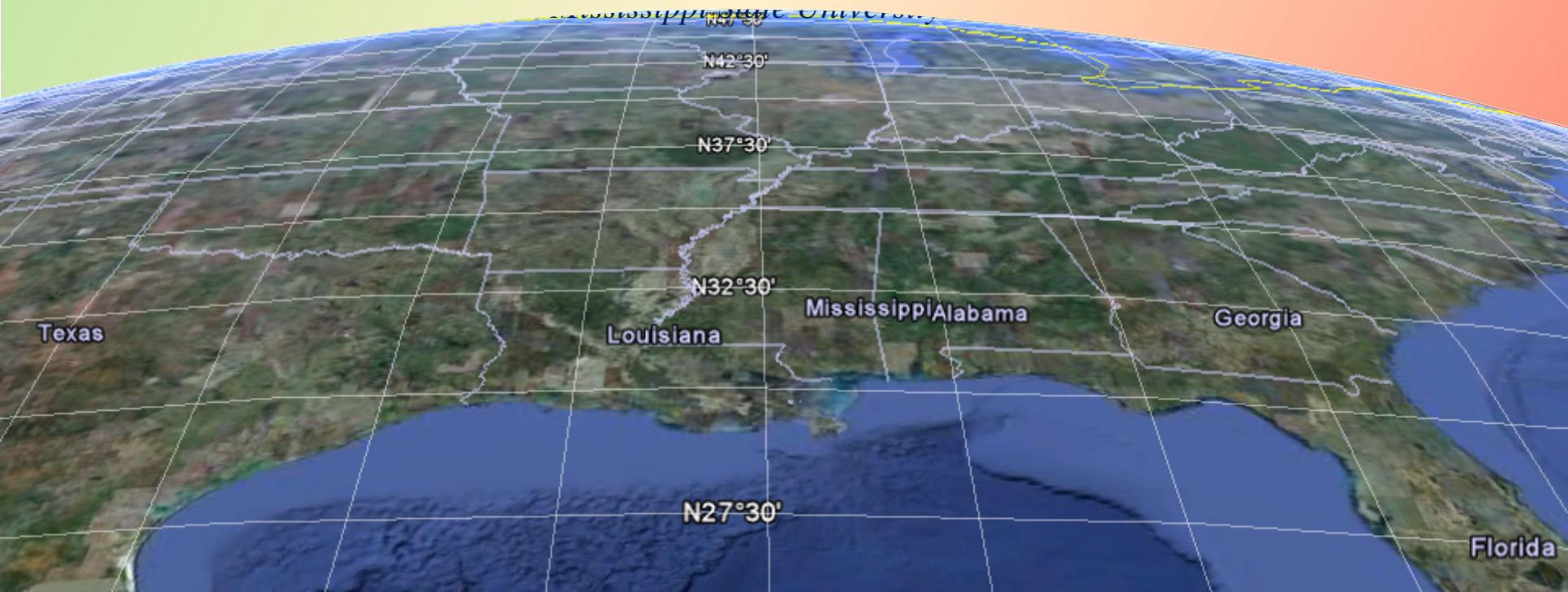
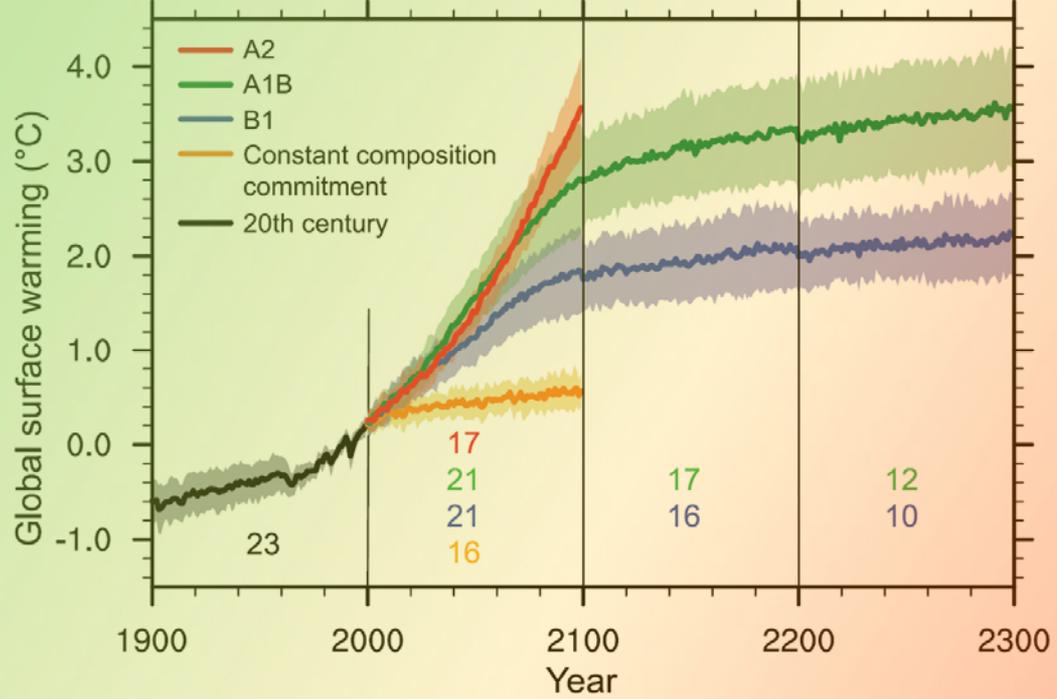
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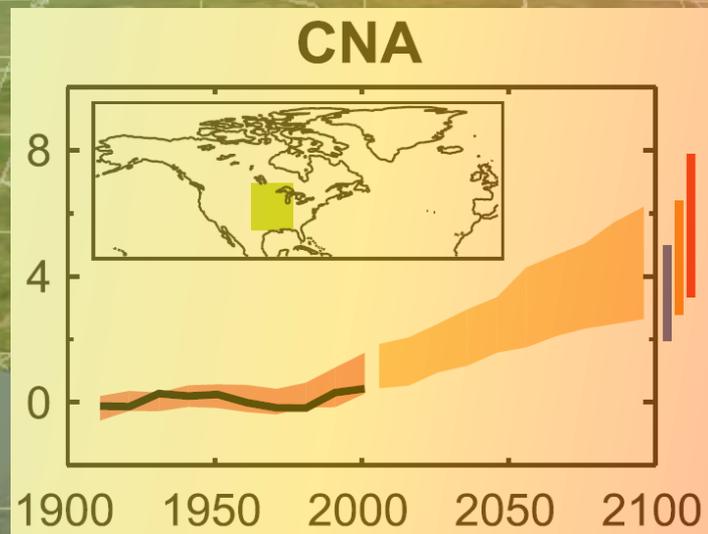
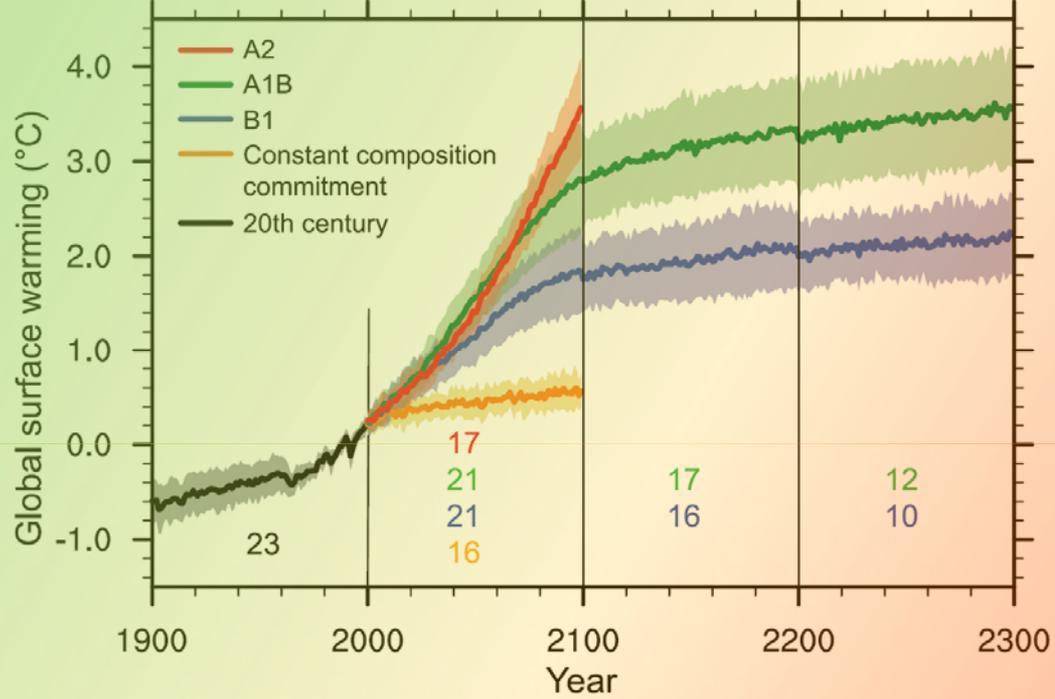
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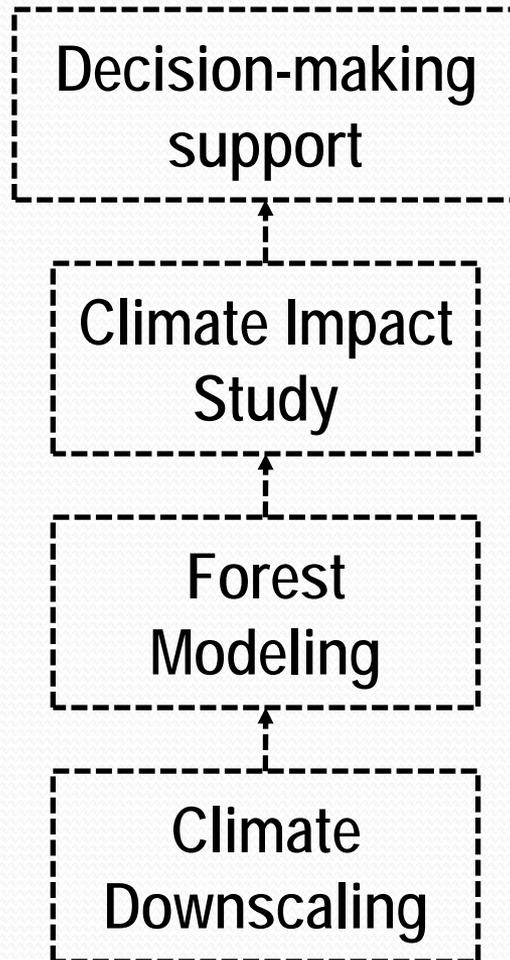




Objectives

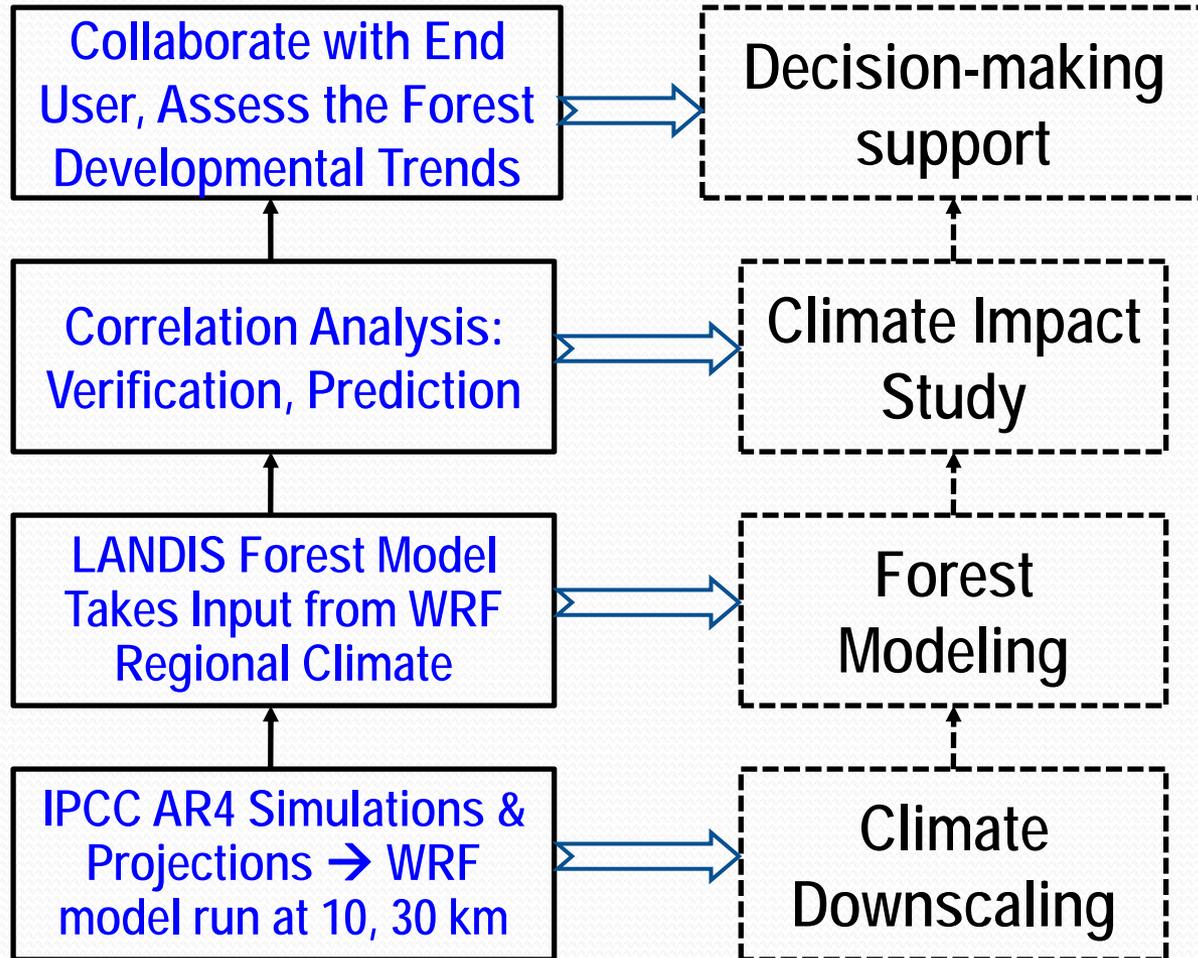
- Provide **decision-making support** for forest management from **Climate Impact Study**
- **Forest Modeling** of forest health, productivity, trend
- Under a changing climate: past, present, future – from **Downscaling** IPCC AR4 climate ($3^{\circ} \times 4^{\circ}$) to 10-30 km resolutions

Procedure



Approach

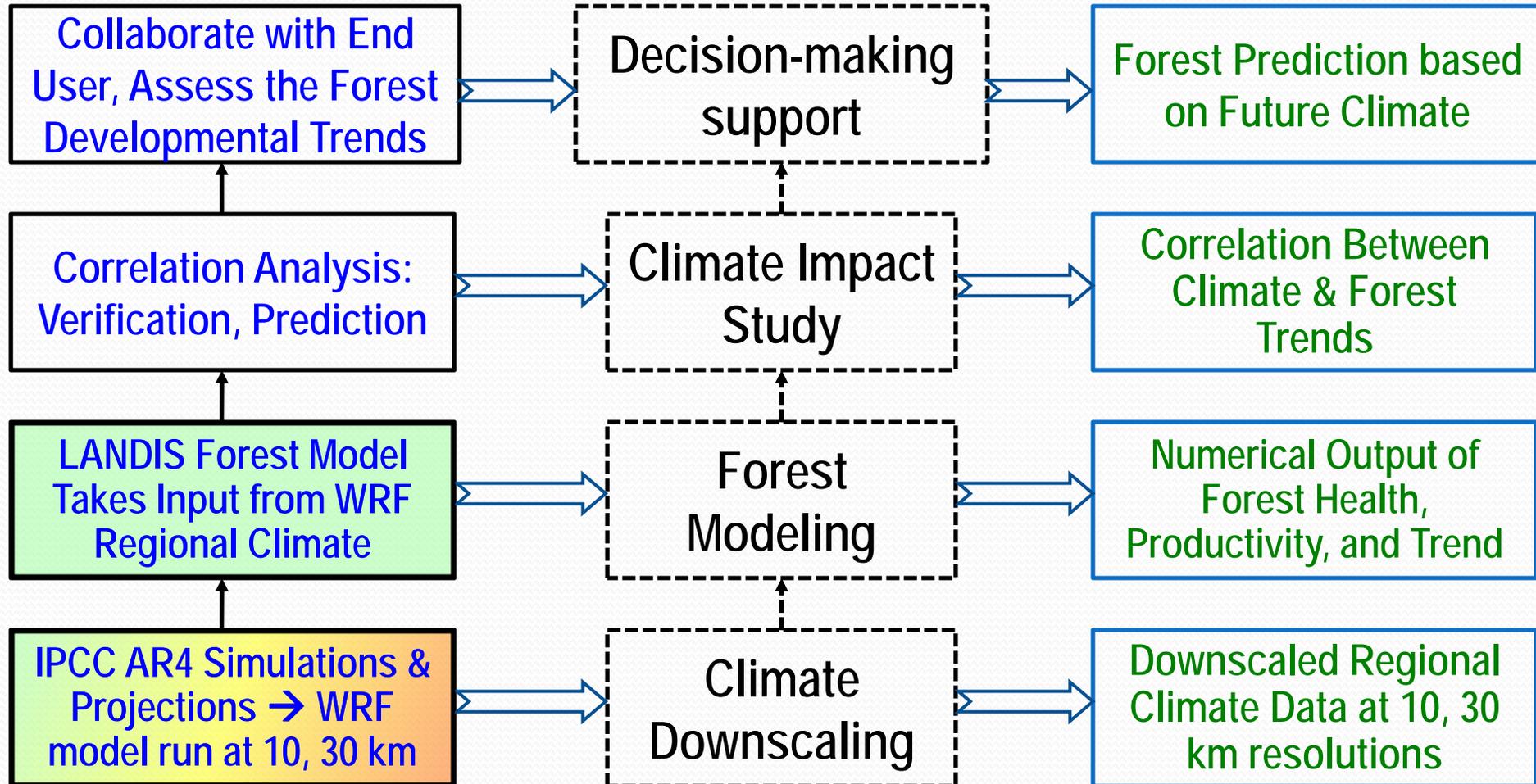
Procedure



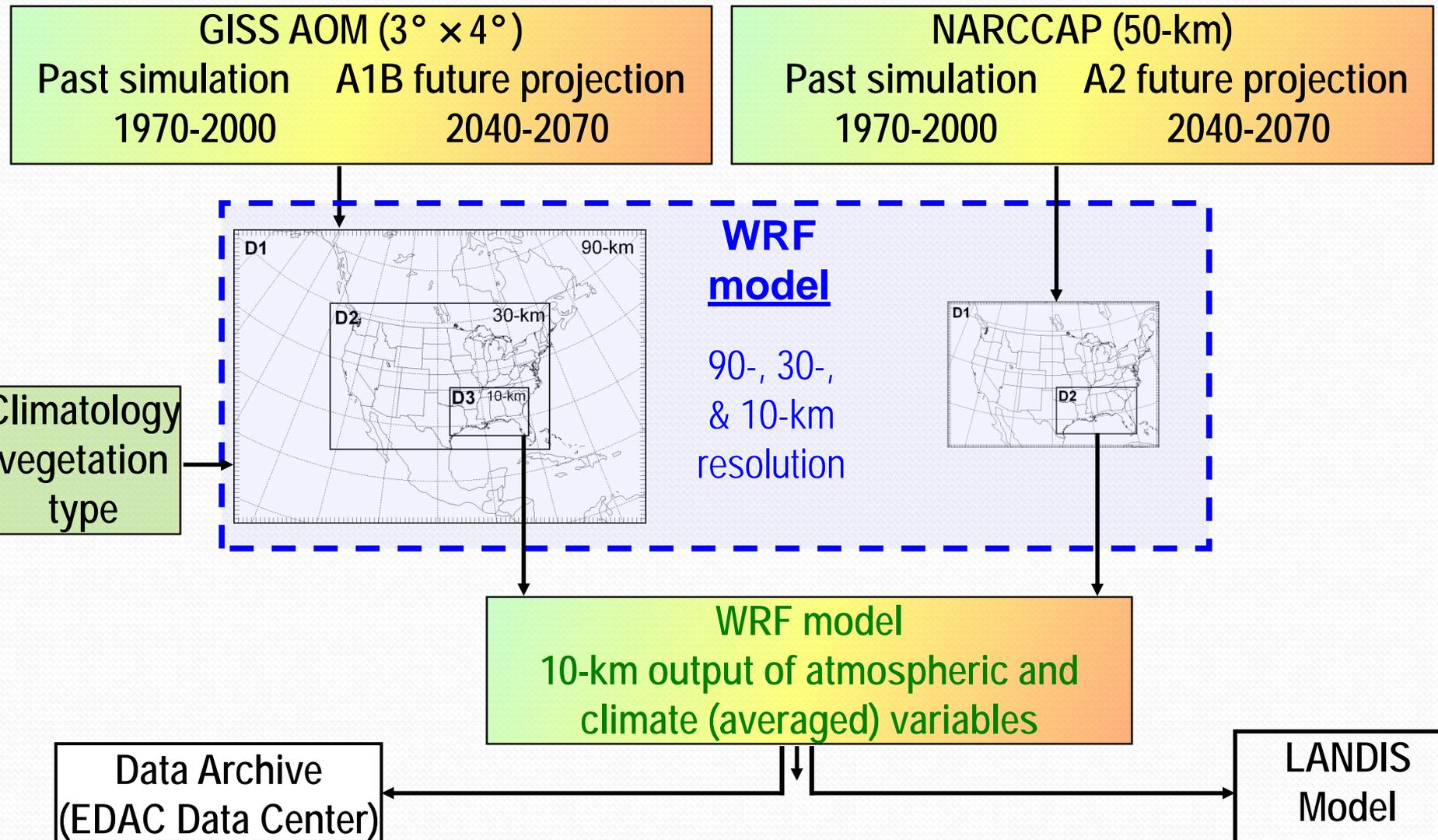
Approach

Procedure

Deliverable



Climate Downscaling – Using WRF



Forest Modeling

Downscaled Climate Data (WRF Model Output at 10 km)

Regulate

Natural disturbance regimes
(fire, wind, insect, disease)

Guide

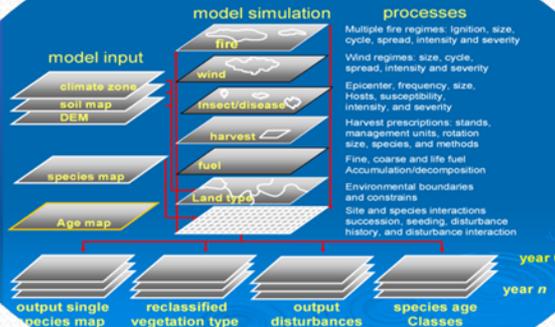
Human activities
(timber harvest, prescribed burn)

Affect

Species life attributes
(seed dispersal, longevity, growth)

Input

LANDIS Operational Design



Initial forest condition
(species composition, age)

Ecological Land Type

Output

Geospatial modeling and LANDIS output analyses

Generate

Maps, figures, tables, and statistics of forest changes under changing climate

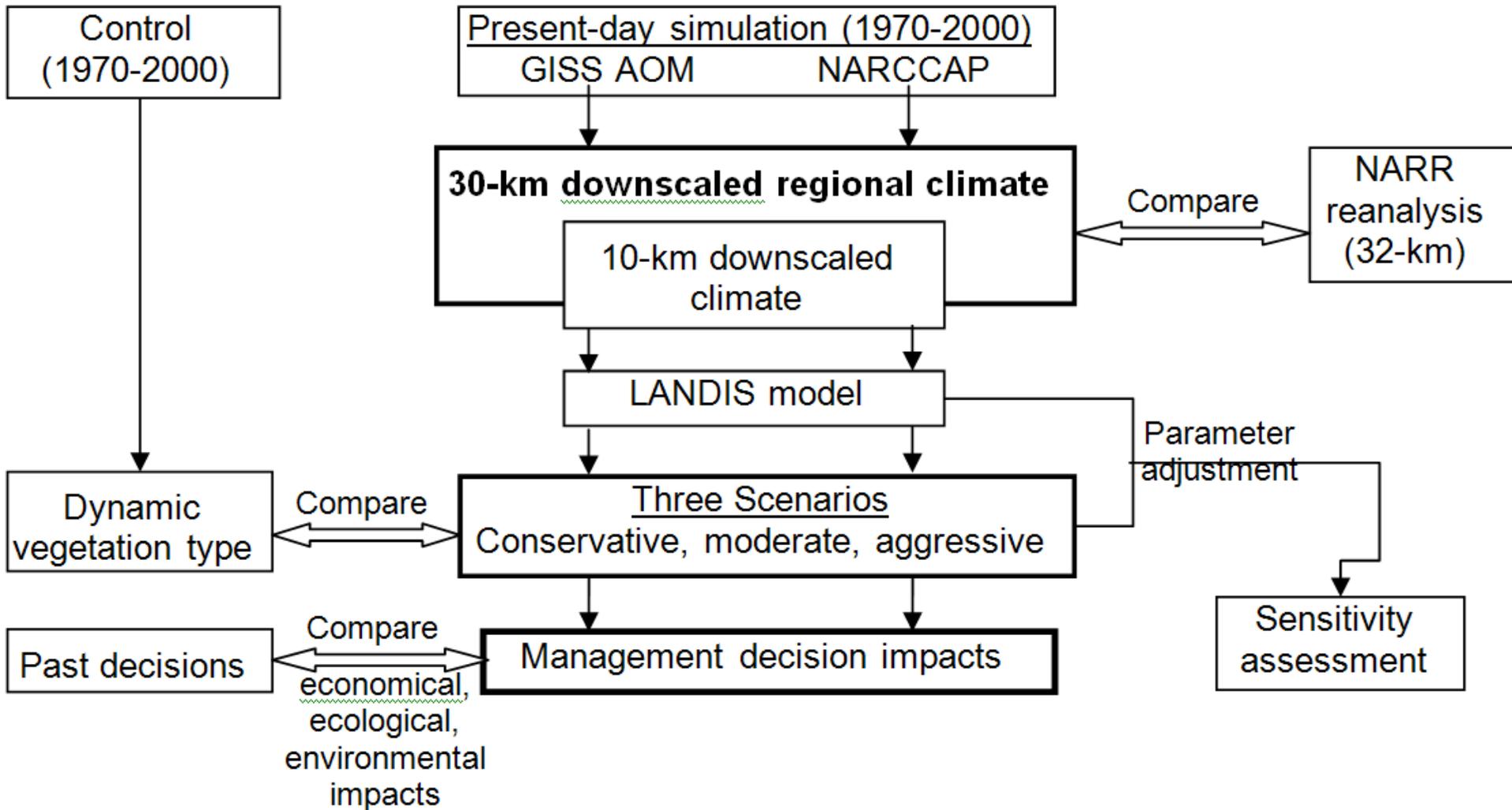
Guide

Management alternatives, plan, and decision-making

Objectives

- Provide **decision-making support** for forest management from **Climate Impact Study**
- **Forest Modeling** of forest health, productivity, trend
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Performance Measure



Tasks	Year/Month	2009			2010					2011															
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Climate downscaling – WRF																									
Data collection: GISS, NARCCAP																									
WRF model configuration and test																									
Downscale modeling of GISS																									
Downscale modeling of NARCCAP																									
Data preparation for LIS & LANDIS																									
Regional climate analysis																									
Drought indices calculation																									
Land surface modeling – LIS																									
Forcing data preparation																									
Dynamic vegetation classification																									
Data preparation for LANDIS																									
Forest modeling – LANDIS																									
Configure for the target region																									
Processing input data																									
Model calibration																									
Modeling of two climates																									
Decision-making support																									
LANDIS model output analysis																									
Prediction products for forests																									
Verification with present																									
Delivering of prediction of future																									
Collaboration, Communication, & Dissemination of research results																									
Scientific conference and workshop																									
Peer-reviewed journal publications																									
Collaboration with end-user																									
Deliver of review reports																									

Degree of shading indicates workload intensity.



Thank You!

Acknowledgement:

Supported by NASA ROSES 2008-GULF Initiative

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