

# Consistent Forest Change Maps 1981 – 2000 from the AVHRR Time Series

Case Studies for South America and Indonesia

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# Motivation

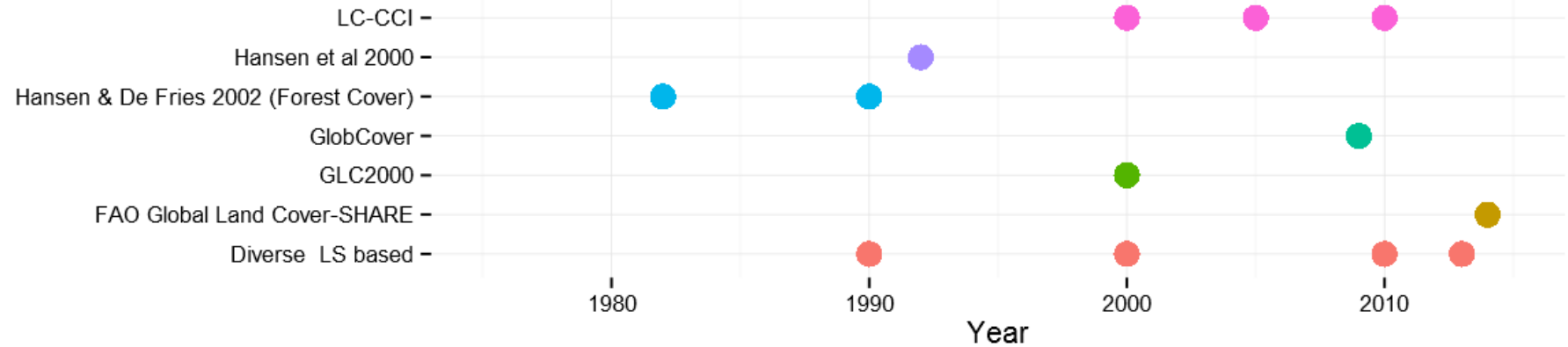
## Satellite Series

MODIS / SPOT VGT -

Landsat -

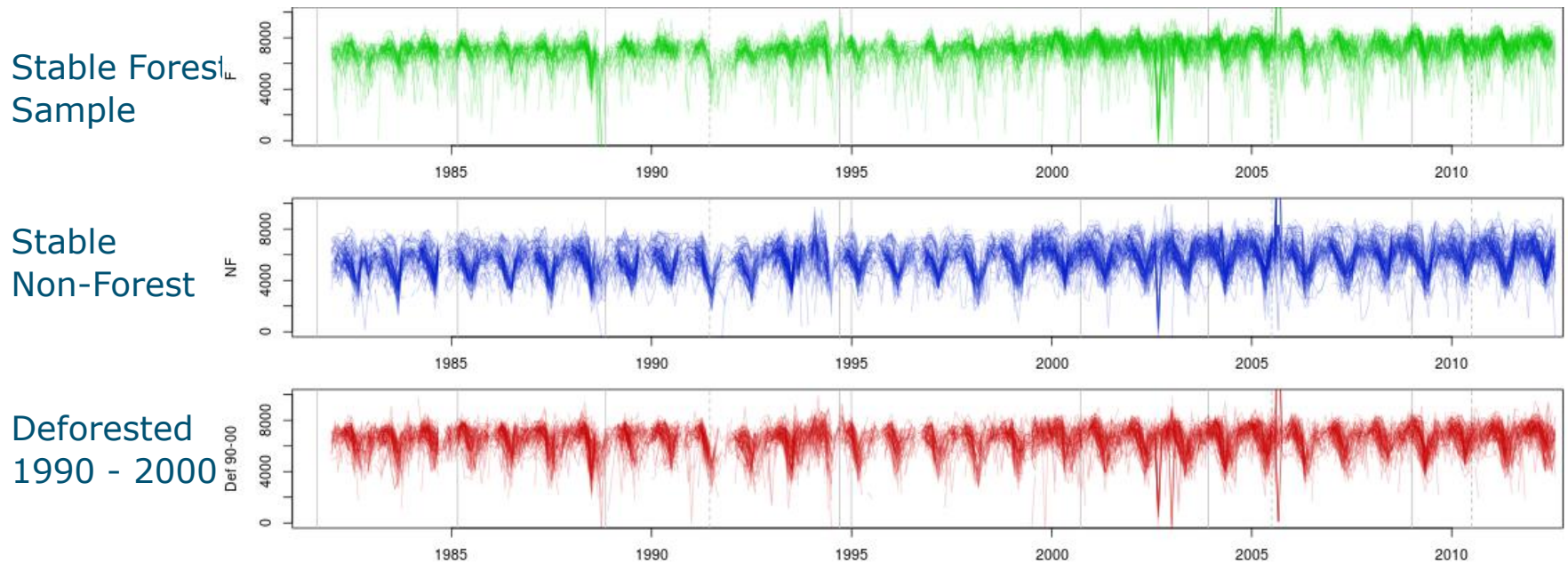
AVHRR -

## Global LC maps

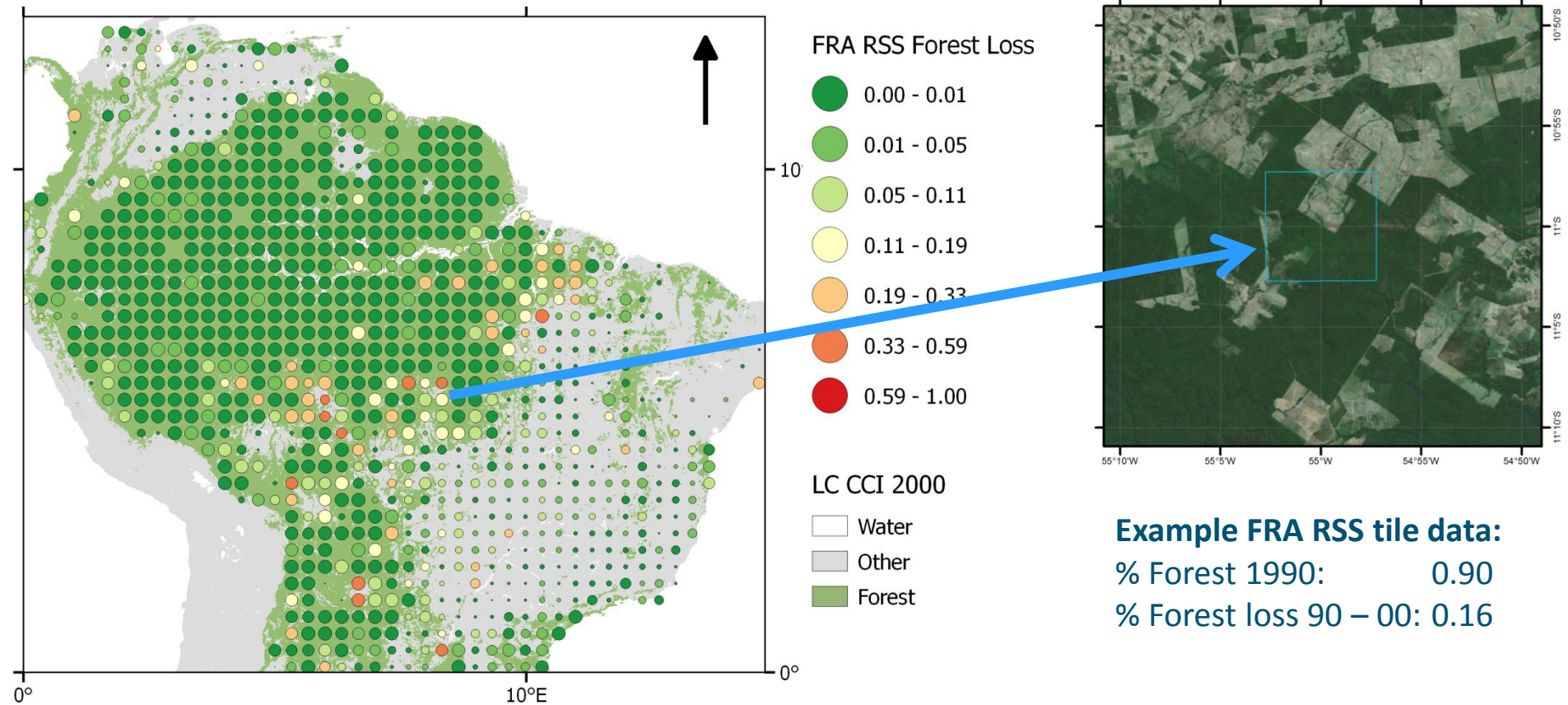


# AVHRR data

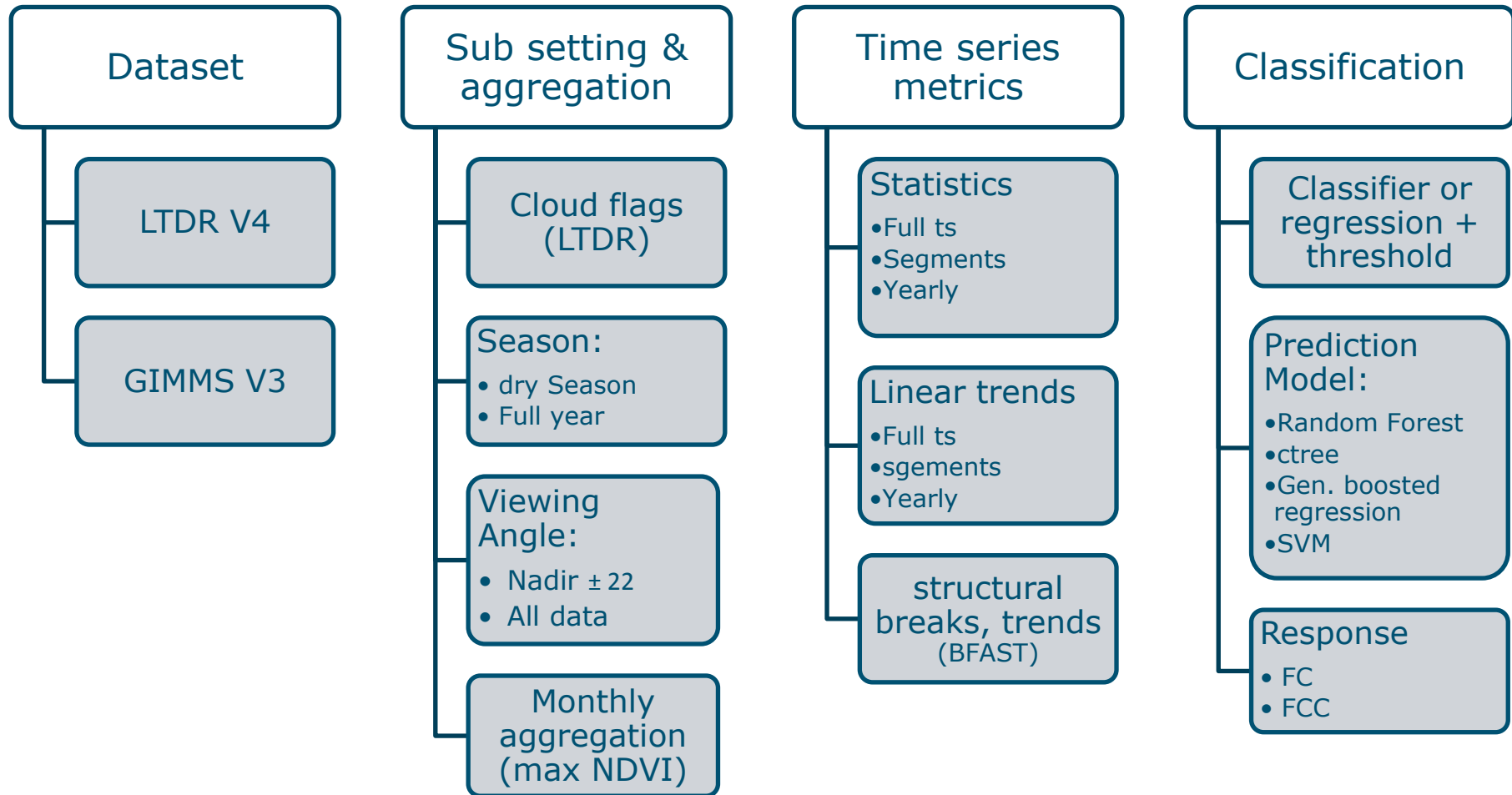
- Daily global coverage 1982 – 2011
- 4 Channels (R, NIR, 2xIR)
- Many known issues for LC mapping
- Different pre-processed datasets (GIMMS, LTDR)



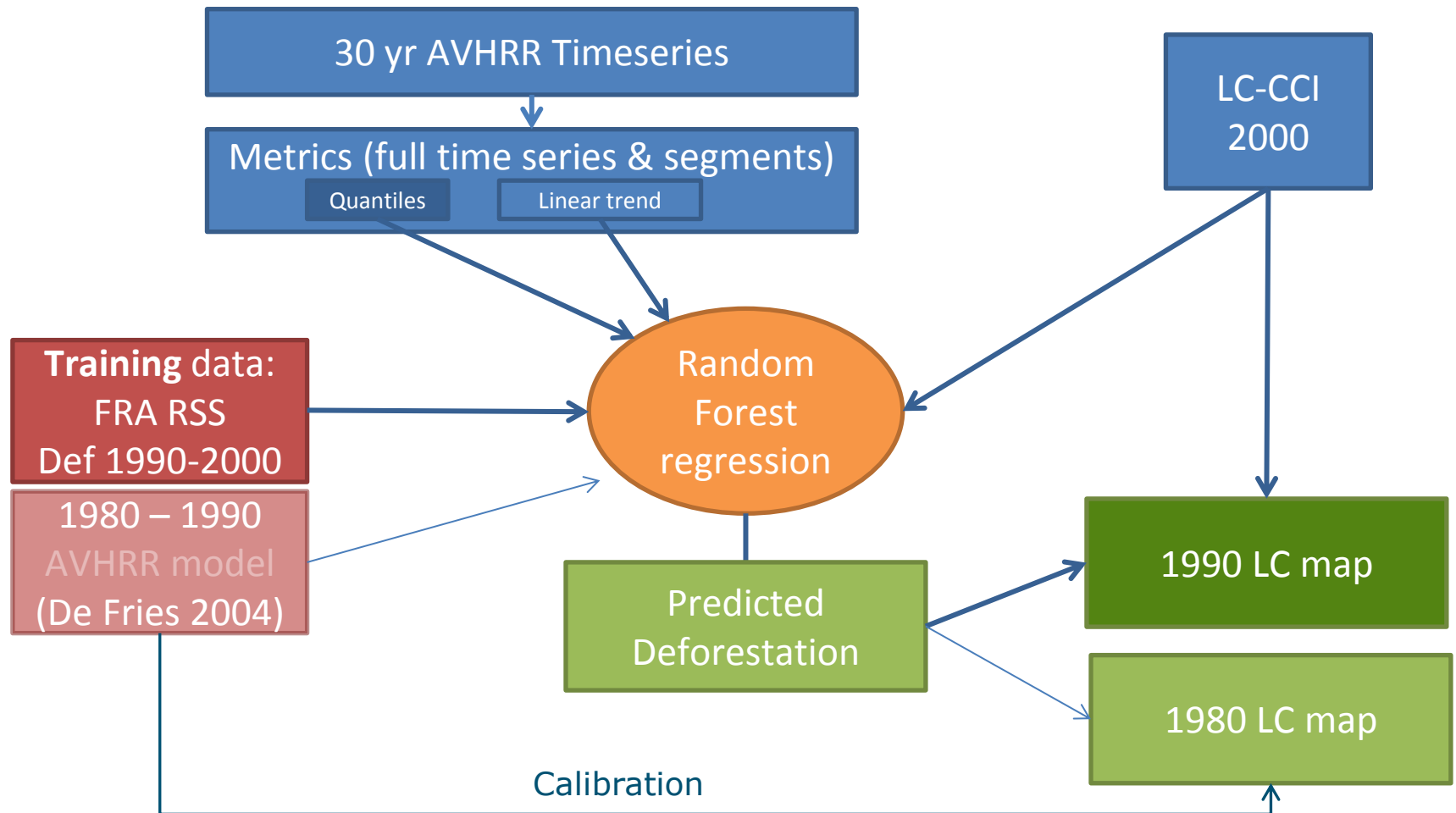
# Training Data: FRA Remote Sensing Survey



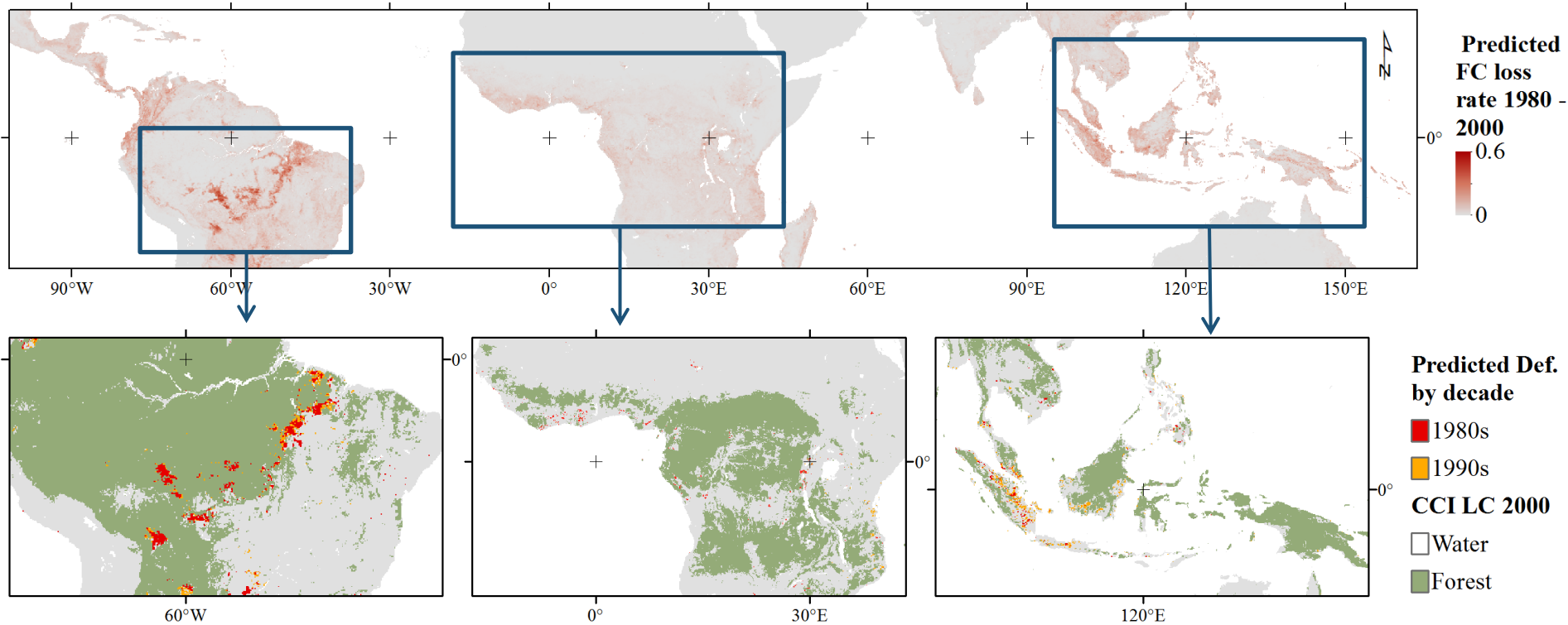
# Methods: Exploration



# Methods

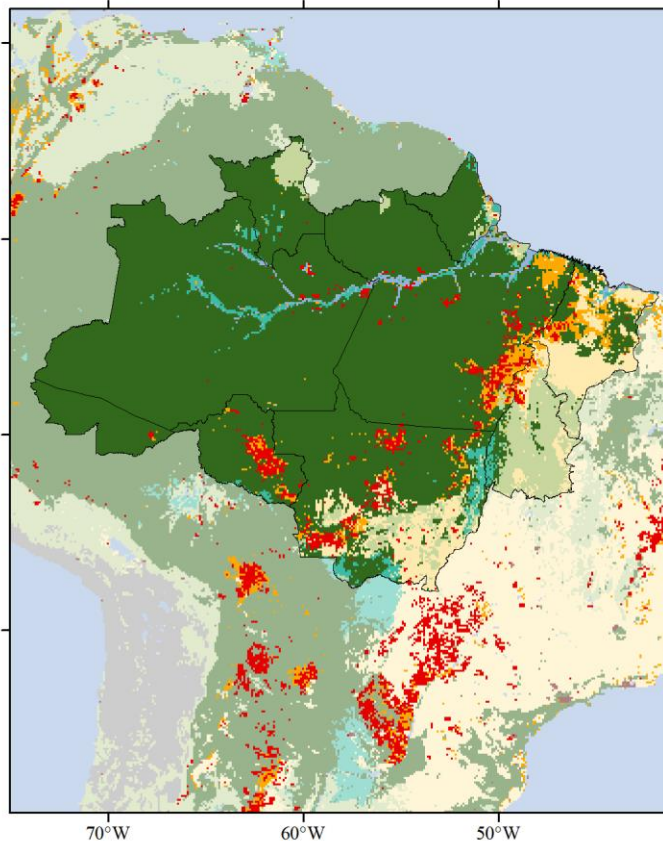


# Results: Pan-Tropical prediction

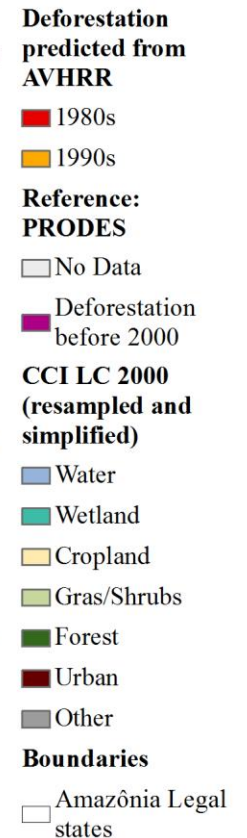
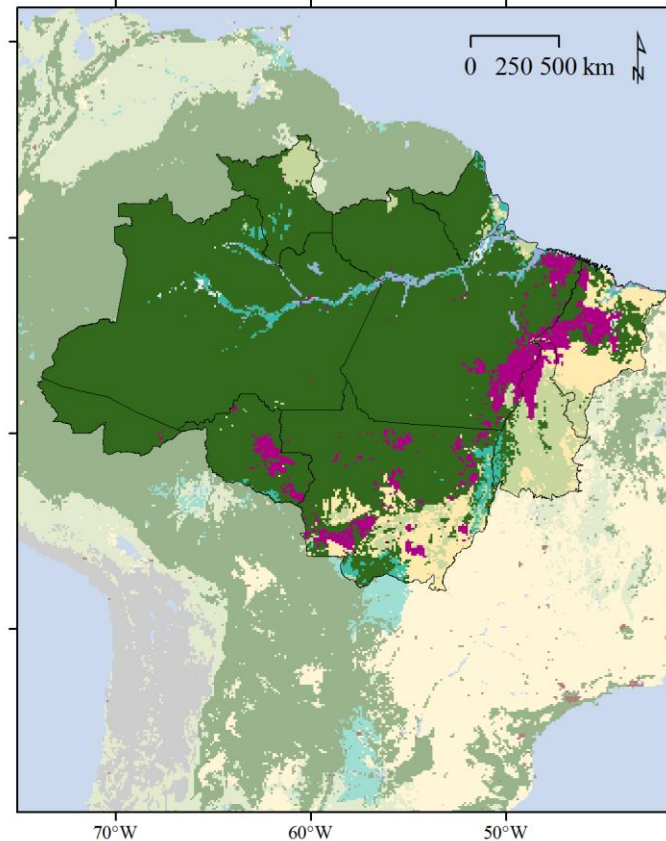


# Results: South America

A) Predicted deforestation



B) Reference: PRODES



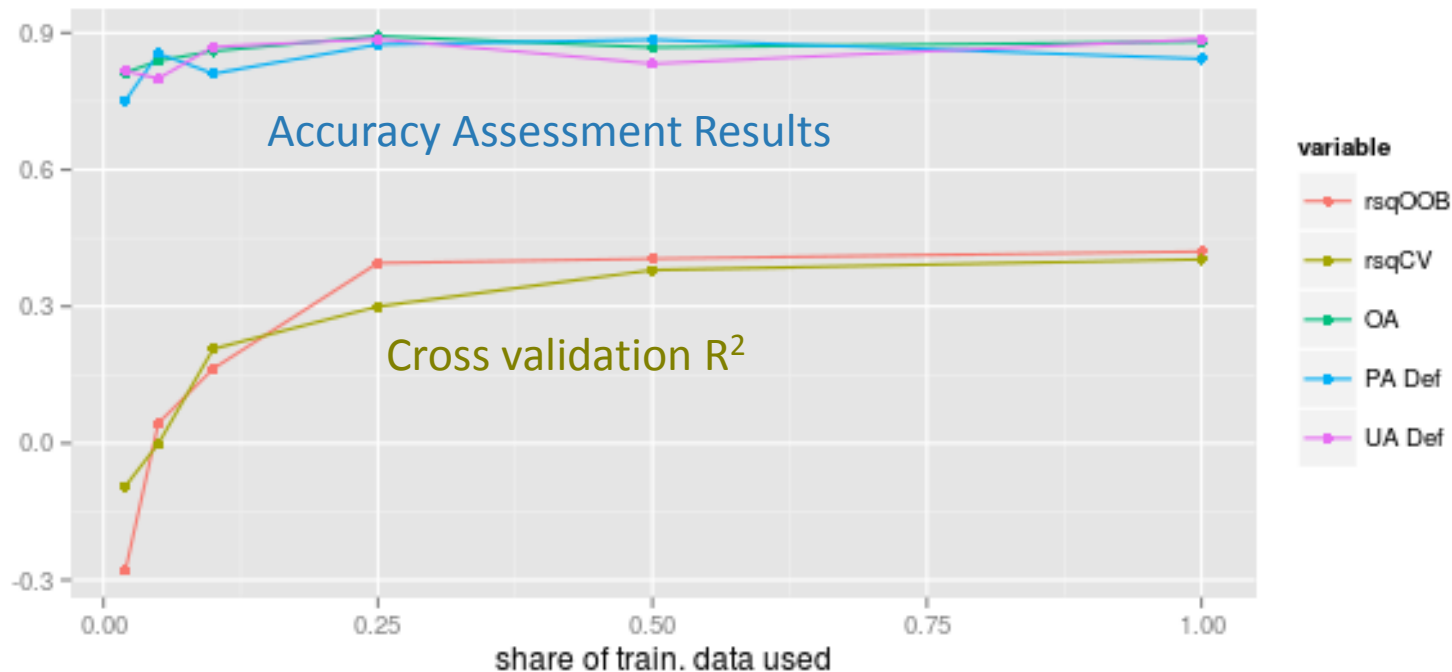
Training area	Ref. data	Response		OA	PA NF	UA NF	PA Def	UA Def
Global	Prodes	Forest Loss (%) 1990-2000		<b>0.881</b>	<b>0.911</b>	<b>0.901</b>	<b>0.830</b>	<b>0.846</b>



# Results: South America

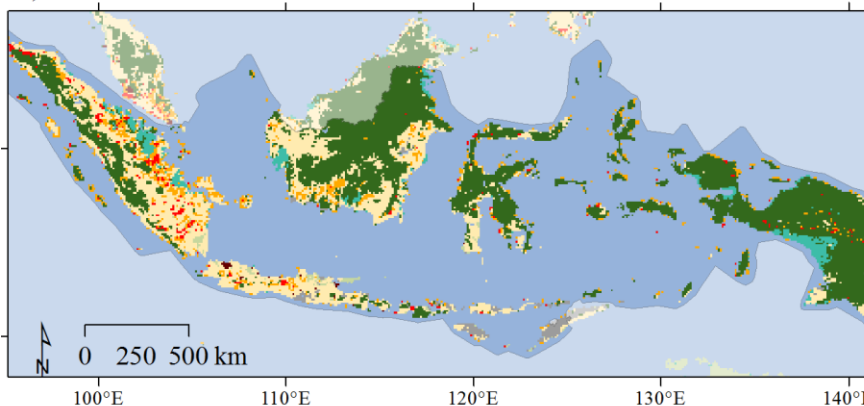
## Reduced training data

- Effects of reducing training data
- show requirements for extending training dataset back to 1980s

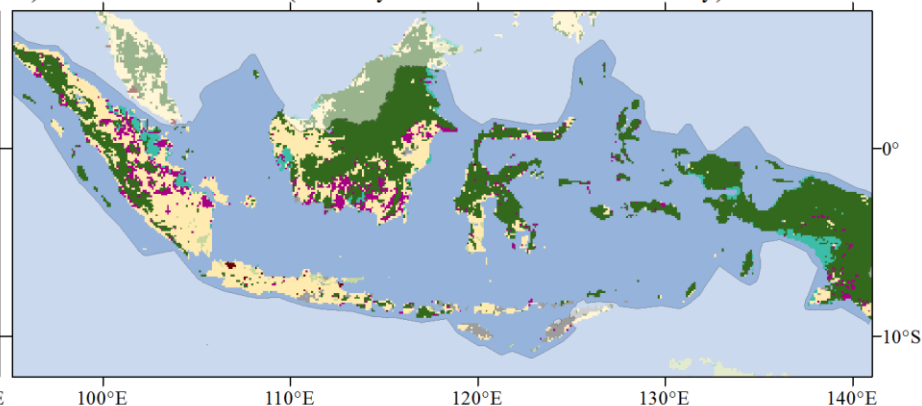


# Results: Indonesia

A) Predicted deforestation



B) Reference: Indonesia (Ministry of Environment and Forestry)



**Boundaries**

□ Indonesia national

**CCI LC 2000  
(resampled and simplified)**

- Water
- Wetland
- Cropland
- Gras/Shrubs
- Forest
- Urban
- Other

**Deforestation  
predicted from  
AVHRR**

- 1980s
- 1990s

**Reference:  
Indonesia**

- Deforestation  
1990 - 2000

Training  
area

Ref. data

Response

OA

PA NF

UA NF

PA Def UA Def

Area  
Def

Area  
NF

Global

Indonesia

Forest Loss  
90-00 (%)

0.802

0.903

0.871

0.202

0.258

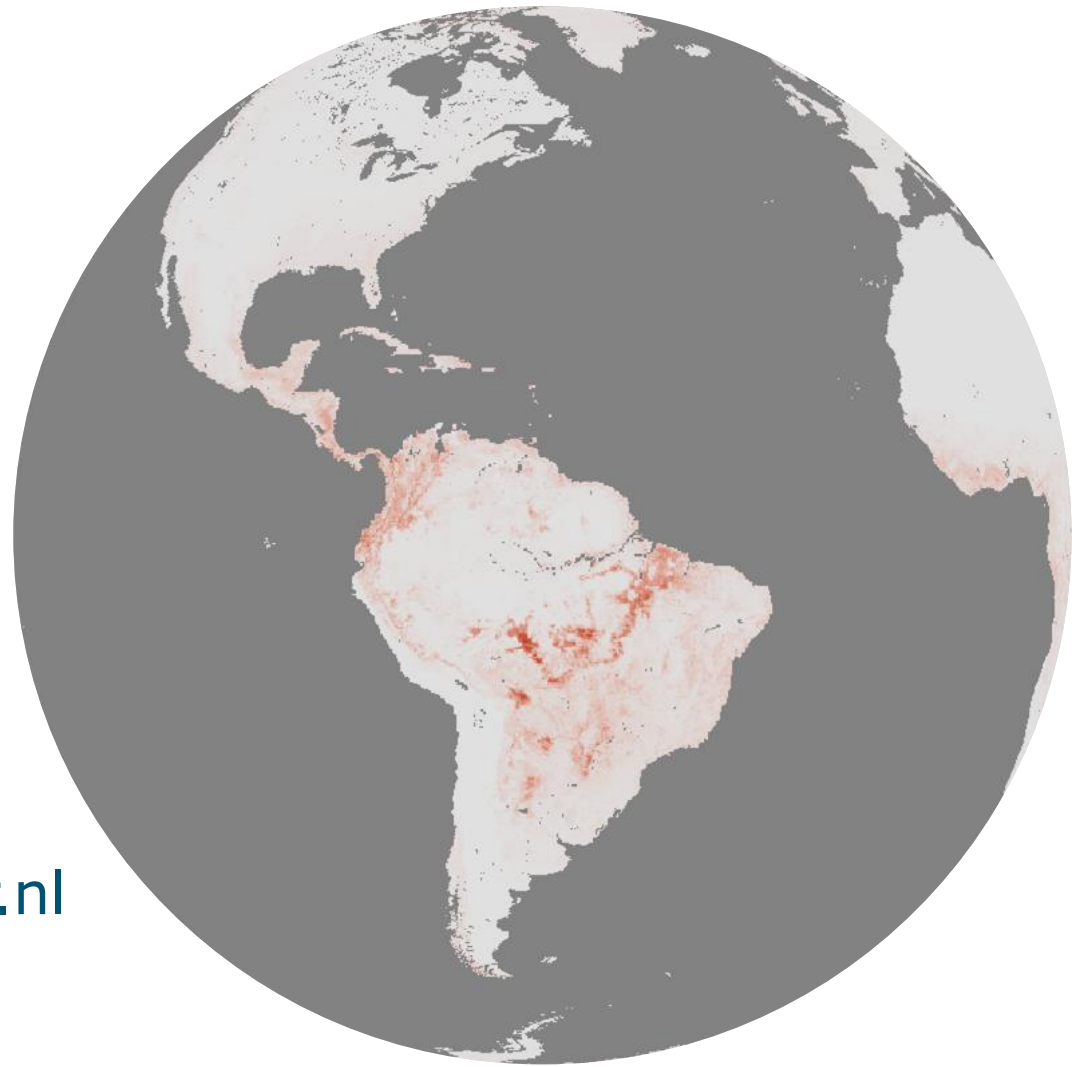
73%

104 %

# Discussion

- Good results for Brazil
- Pan-tropical pattern look reasonable
- Indonesia issues:
  - LC of non forest area:  
mosaic cropland / tree cover
  - Geolocation of AVHRR data
  - Quality of reference data
  - Orbital drift
- Training data for 1980s requires effort

# Thank you!



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