LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

PEER

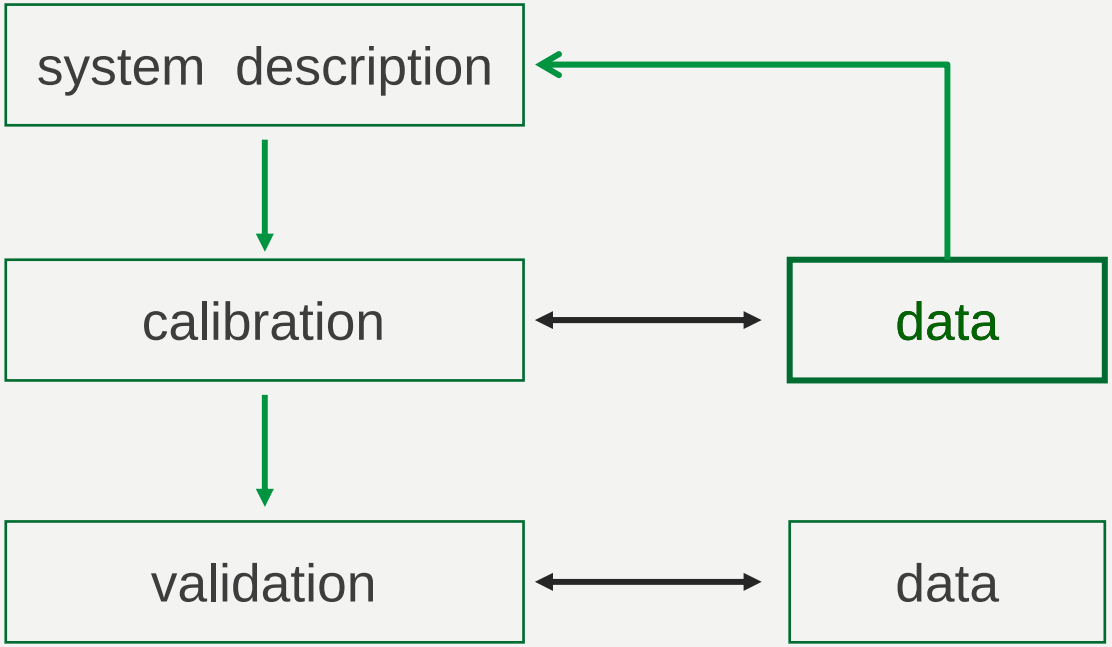
MARIE CURIE ACTIONS

Development of hybrid stochastic-mechanistic models for land-surface to atmosphere water and carbon fluxes

Judith Horn

Data based mechanistic modeling (DBM)

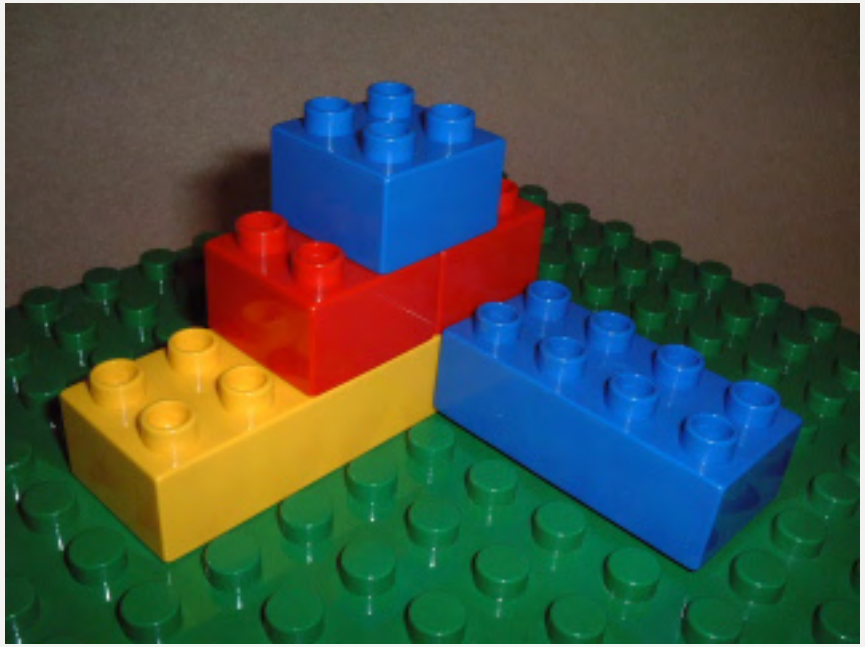
- mechanistic principles ↔ data information content
- model development at the scale of interest



Data based mechanistic modeling (DBM)

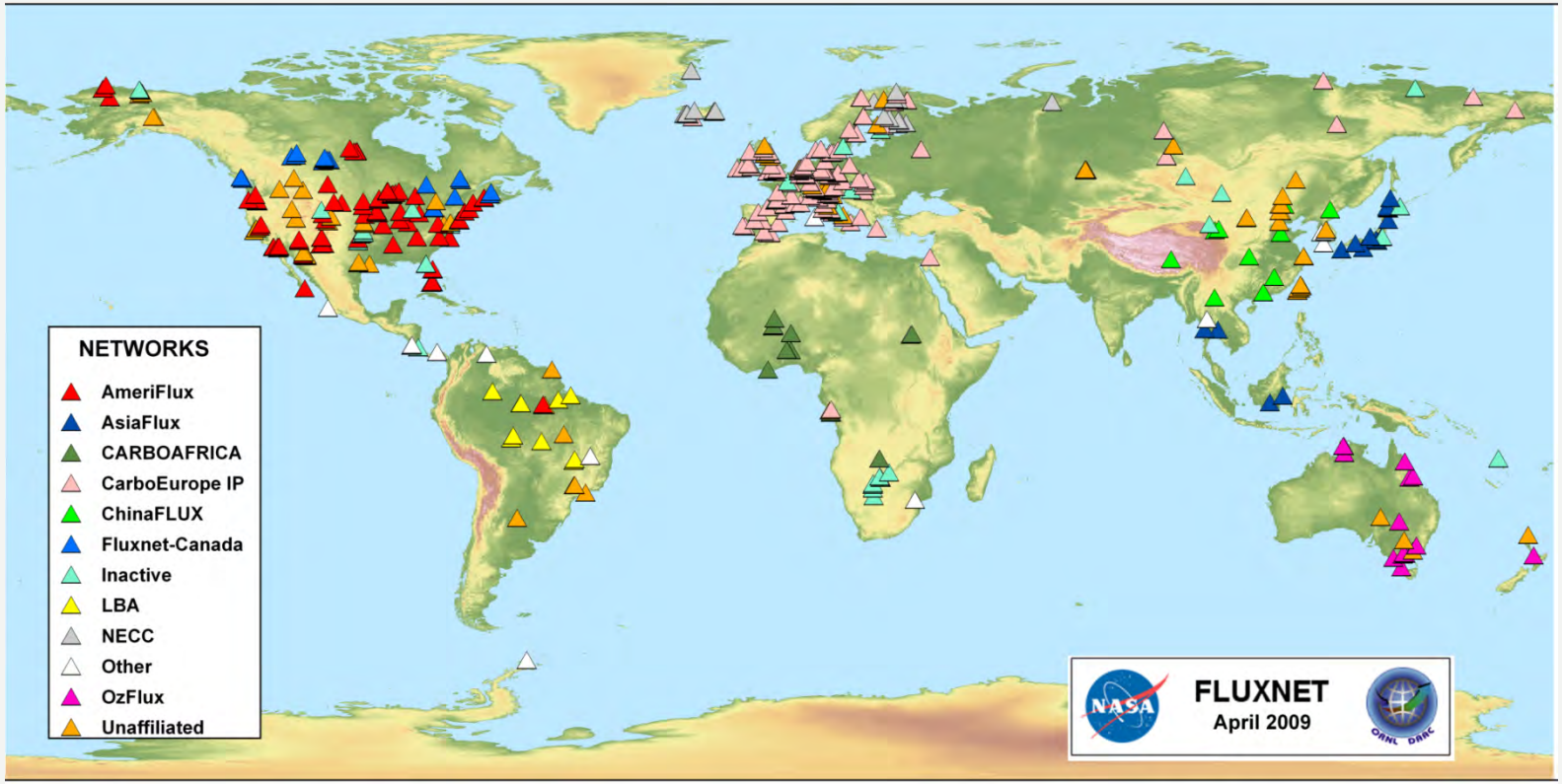
- mechanistic principles ↔ data information content
- model development at the scale of interest

→ simple, robust models with clearly identifiable parameters



FLUXNET data → AmeriFlux and CarboEurope

Remote sensing data → MODIS



Data

Land Surface Processes and Land Use Change

Lex Comber

From Terra and Aqua MODIS to PROBA/CHRIS

Prof. Mike Barnsley (2007)
Remote Sensing of the Land Surface

Data Assimilation

Lecture 1

Principles of Data Assimilation

Mike Fisher

ECMWF

Radiative Transfer, Retrieval of Data products: Verification of atmosheric and tropospheric models

Lecture No 5 (Burrows Lecture 2)

Introduction into radiative transfer

METIER Training Course
September 25, 2006, Maarten Krol

Radiative Transfer Modeling

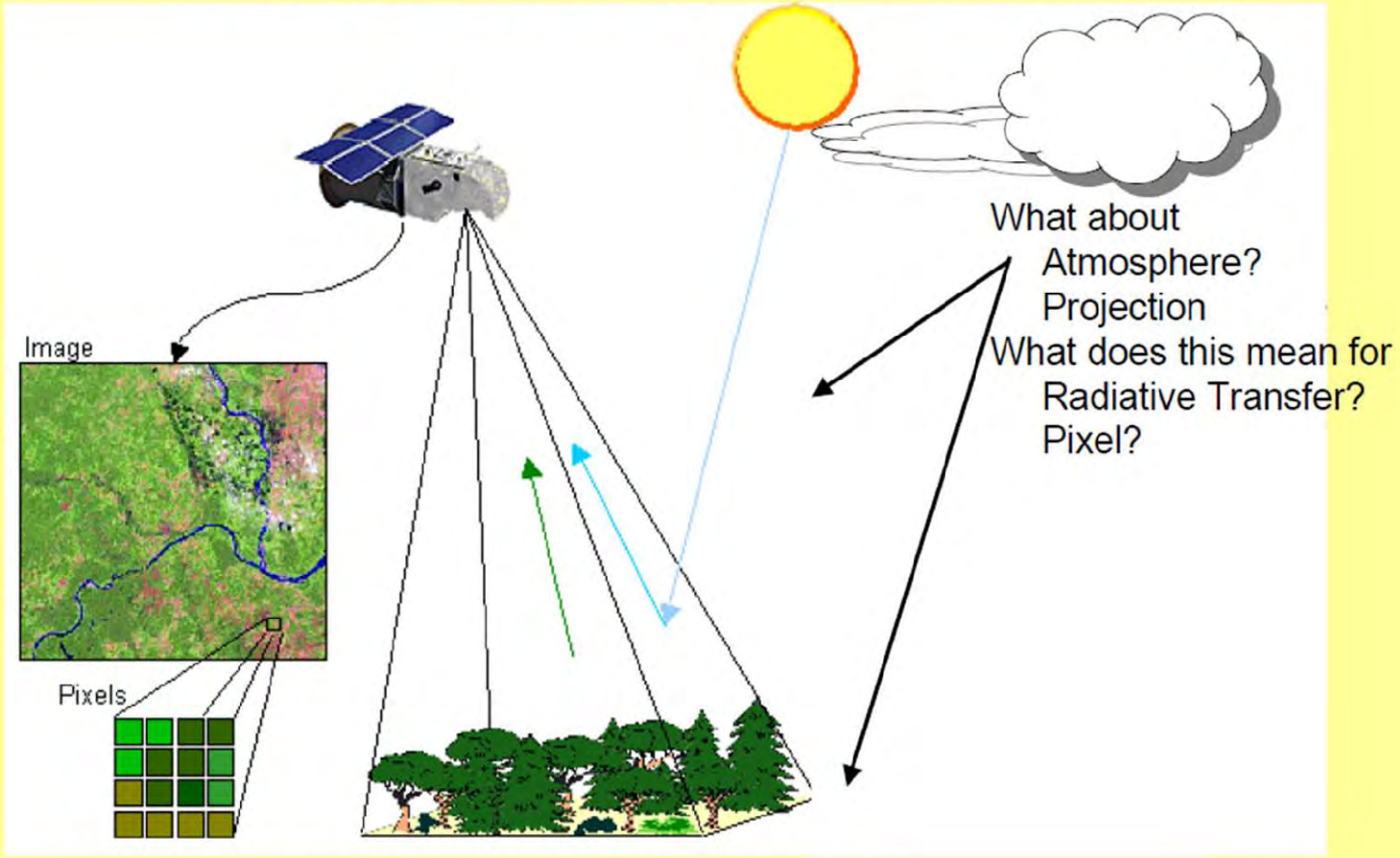
.... over vegetated surfaces

Nadine Gobron

Global land cover mapping: conceptual and historical background

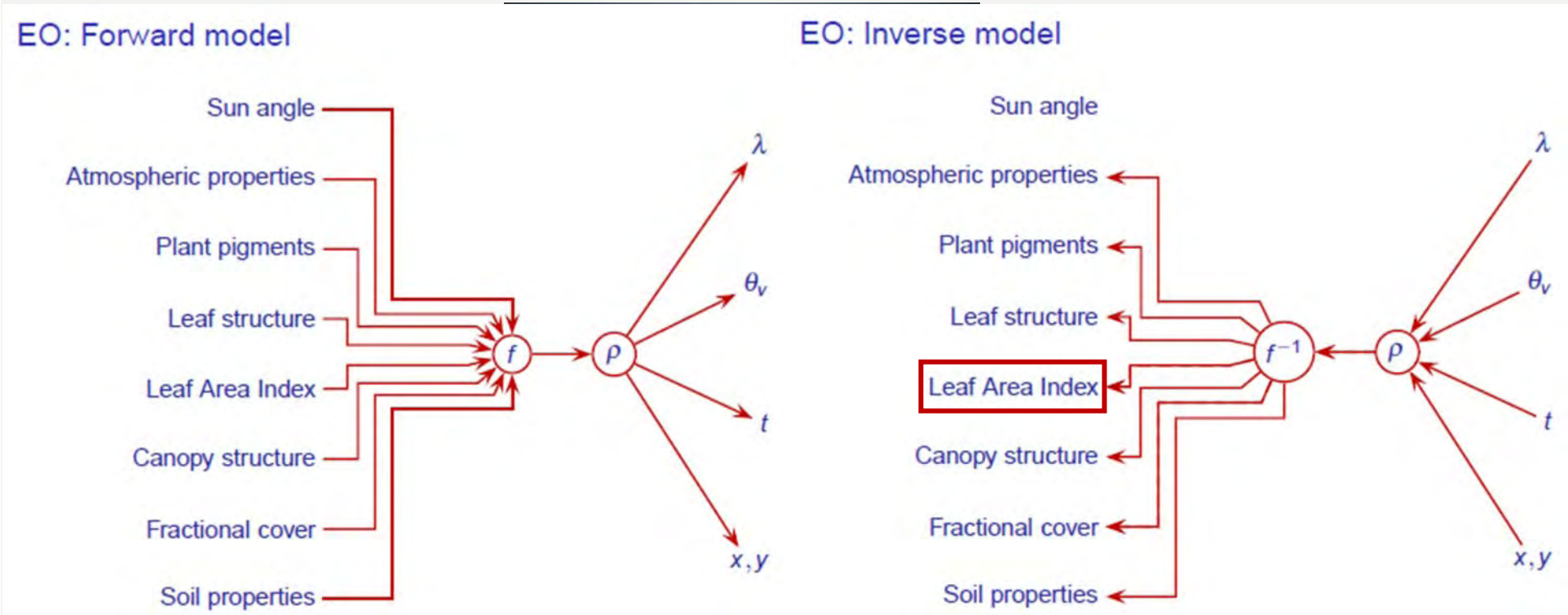
Sergey BARTALEV

What is really measured?



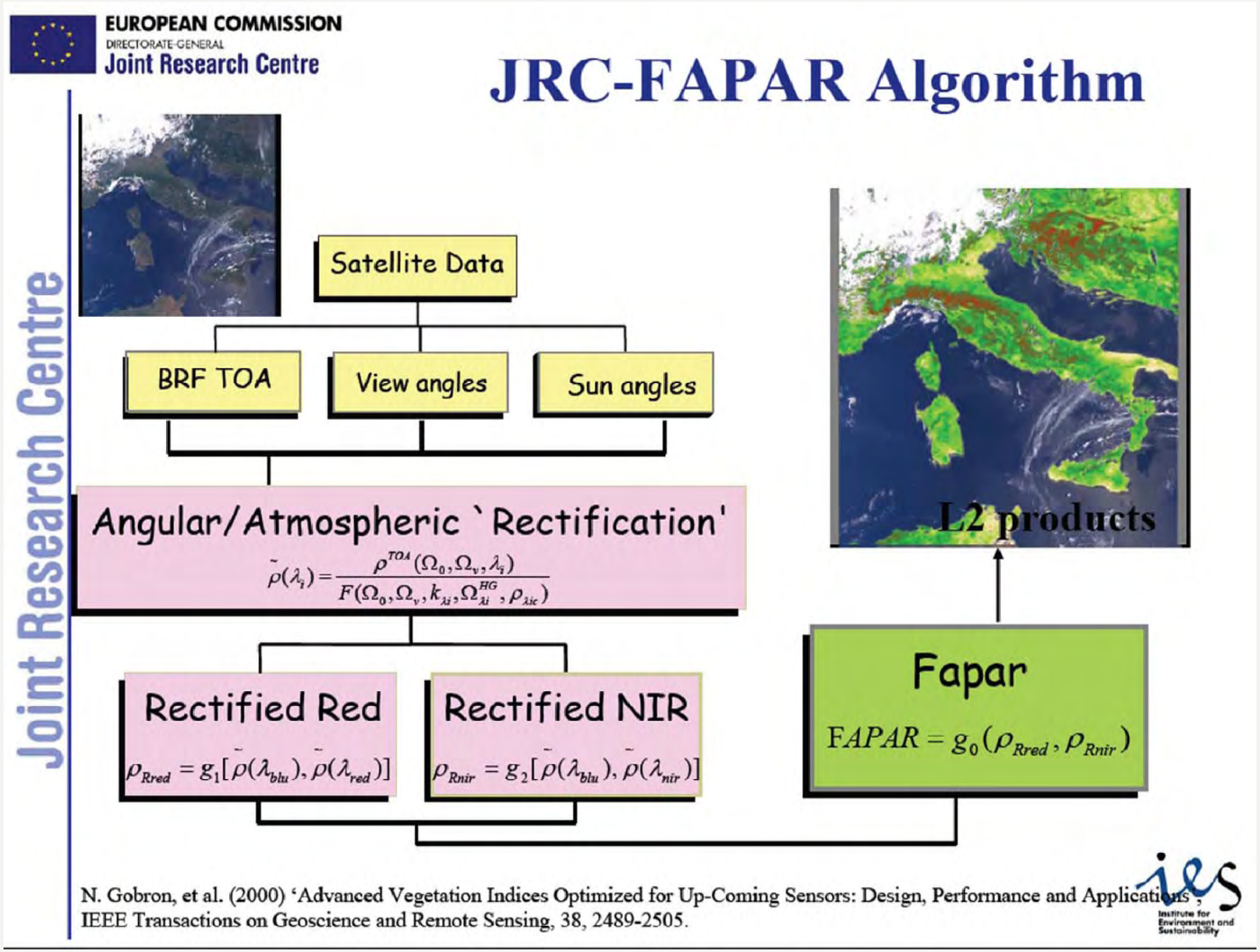
http://www.discover-aai.com/technology/spectral.htm

- Retrieved by 3D inverse modeling



MODIS LAI

- Retrieved by 3D inverse modeling
- Quality criteria: „best“, „good“, „other“


EUROPEAN COMMISSION
DIRECTORATE-GENERAL
Joint Research Centre
JRC-FAPAR Algorithm
Joint Research Centre
Satellite Data
BRF TOA
View angles
Sun angles
Angular/Atmospheric `Rectification'
$\tilde{\rho}(\lambda_i) = \frac{\rho^{TOA}(\Omega_0, \Omega_v, \lambda_i)}{F(\Omega_0, \Omega_v, k_{\lambda i}, \Omega_{\lambda i}^{HG}, \rho_{\lambda ic})}$
Rectified Red
$\rho_{Rred} = g_1[\tilde{\rho}(\lambda_{blu}), \tilde{\rho}(\lambda_{red})]$
Rectified NIR
$\rho_{Rnir} = g_2[\tilde{\rho}(\lambda_{blu}), \tilde{\rho}(\lambda_{nir})]$
L2 products
Fapar
$FAPAR = g_0(\rho_{Rred}, \rho_{Rnir})$
N. Gobron, et al. (2000) 'Advanced Vegetation Indices Optimized for Up-Coming Sensors: Design, Performance and Applications',
IEEE Transactions on Geoscience and Remote Sensing, 38, 2489-2505.
ies
Institute for Environment and Sustainability

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Thanks!

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