

# Priority Task - TERRA Nova

An aerial photograph of a mountainous region. The landscape is a mix of dense green forests and large, irregularly shaped areas of cleared land, appearing in shades of brown and tan. A network of roads and paths is visible across the terrain.

## **COSMO General Meeting WG3b Parallel Session September 2016**

**Yiftach Ziv – IMS**

**J.M. Bettems – Meteoswiss, WG3b; J. Helmert - DWD**

## TERRA Nova - Background

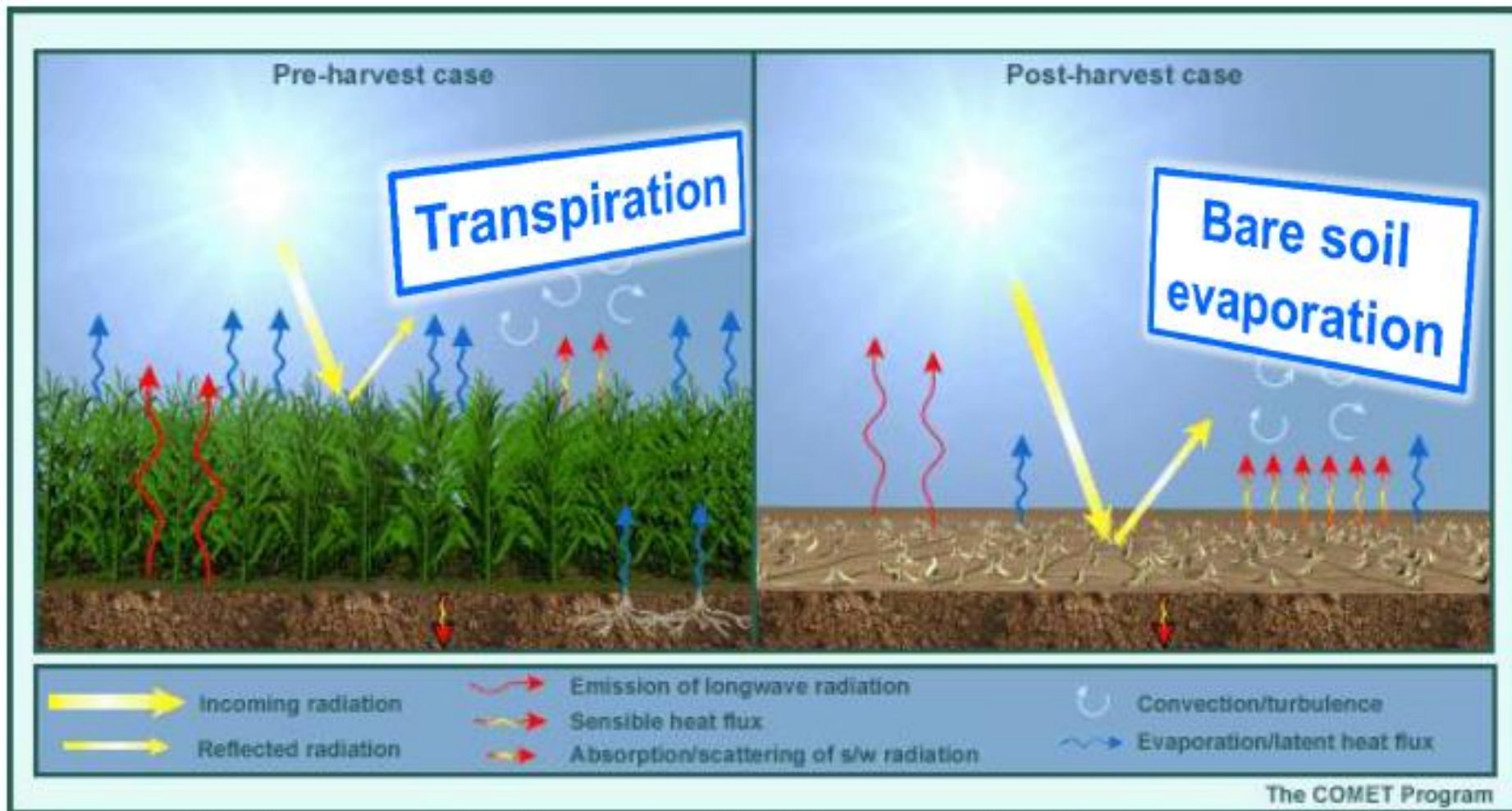
- A new TERRA module in ICON
- Introducing new parametrizations and schemes
- Good results for new TERRA on global scale
- Assimilation of new module to COSMO is expected to improve model skills, but needs to be tested

# TERRA Nova – Major Improvements

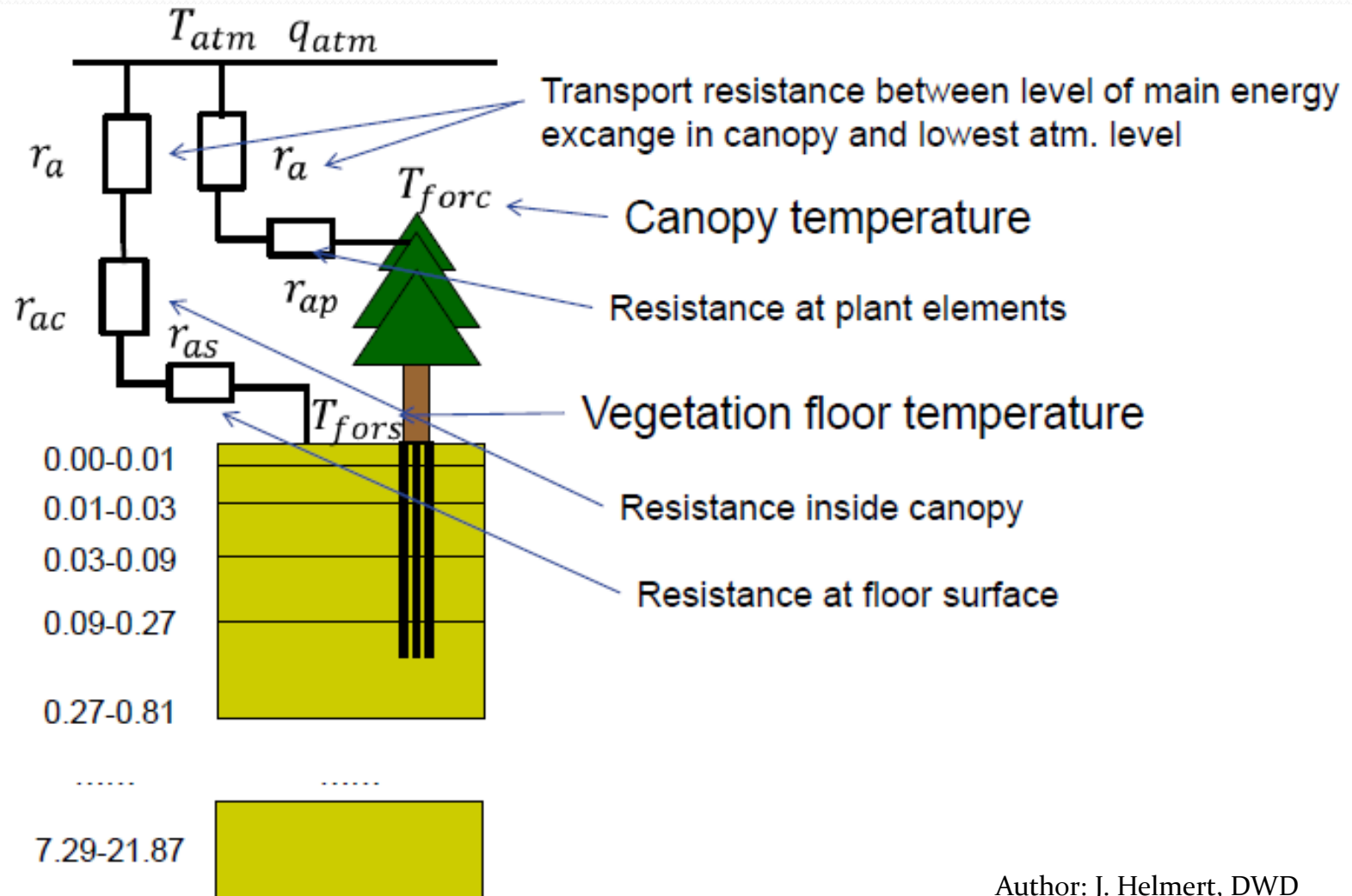
- Blocking Structure
- Bare soil evaporation
- Canopy scheme
- Interception storage



# TERRA Nova – Bare soil evaporation



# TERRA Nova – Canopy scheme

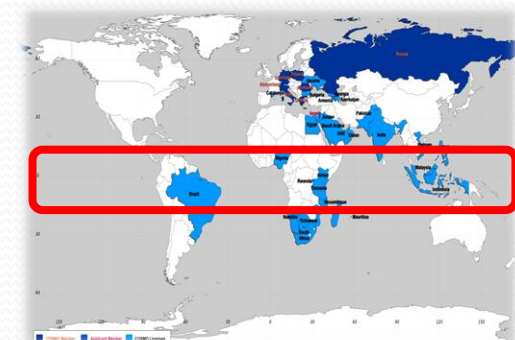
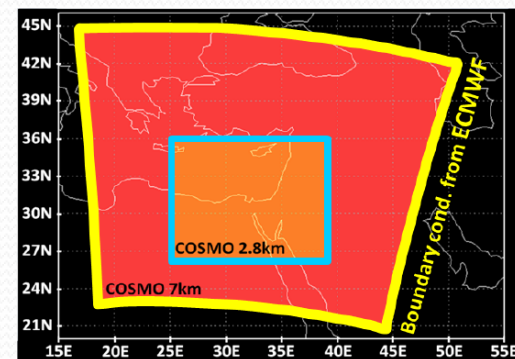
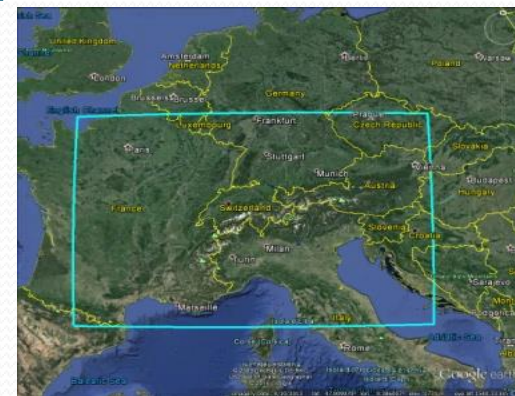


# TERRA Nova – Priority Task (0.4 FTE)

Task	Contributing Scientist(s)	FTE-Years	Start	Deliverables	Date of Delivery
1	Y. Ziv (IMS)	0.15	9.2016	Forecast skill comparison of current soil model vs. new with different setups (season, resolution, domain). Analysis of differences between reference run and new soil model. Comparison of COSMO with new soil model and convection parameterization with ICON-EU (DWD).	5.2017
2	Y. Ziv (IMS) Y. Levi (IMS) J.M Bettems (MS) J. Helmert (DWD)	0.15 0.01 0.02 0.02	2.2017	A thorough assessment of new interception storage, bare soil evaporation and canopy schemes based on model sensitivity studies.	9.2017
3	Y. Ziv (IMS) A. Shtivelman (IMS)	0.03 0.02	9.2016	COSMO environment set up in a ECMWF computational centre, enabling test runs of the task	1.2017

# TERRA Nova – Methodology

- 3 domains
    - Central Europe
    - Tropical set up
    - Israel
  - 3 resolutions: 6.8km, 2.2km, 1.1km
  - 2 seasons: winter (snow), summer
- } X2
- ECMWF computing centre: ~ 2 Mil. BUs



## TERRA Nova – Verification ?

- Parameters tested
  - Meteorological parameters: T, RH
  - Soil parameters: T, WC
  - Fluxes (availability)
- Forecast range
  - Analyses
  - No. of ranges
- **Ideas are Welcome**



## TERRA Nova – Checking New Schemes

- Test cases approach
  - Verification against flux measurements (availability)
  - Not a full calibration
- 
- **Ideas are Welcome**



**Thank You**

**Yiftach Ziv, IMS**