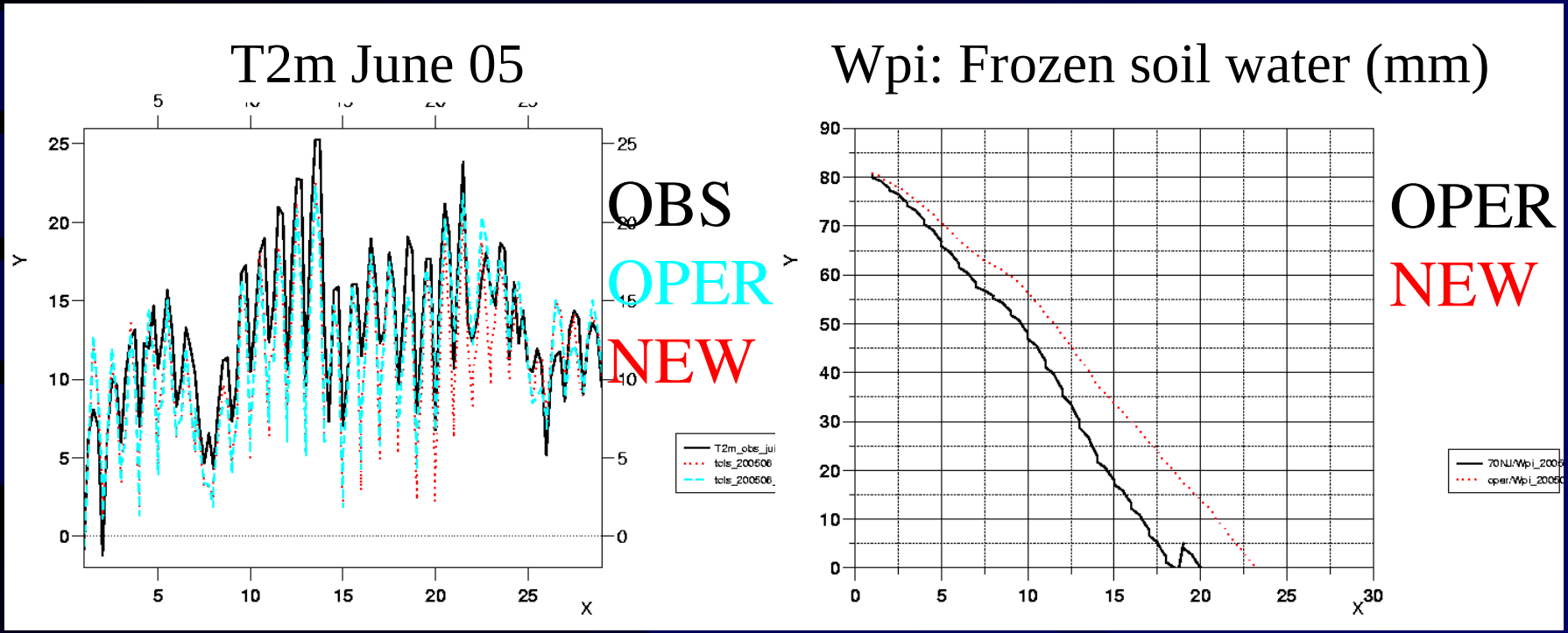
Changes in ARPEGE and ALADIN-France (operational since 23th January 2006)

- Use of new orographic database (GTOPO30)
- New climatologies for snow, soil temperature and soil moisture (GSWP) used for horizontal interpolations in 4D-Var and post-processing
- Correction of frozen soil water using 2m temperature observations in surface analysis

Frozen soil correction using 2m observations in surface analysis



Evolution of T2m and Wpi simulated (oper, new) and observed in Sodankyla (Finland)

Changes in ARPEGE and ALADIN-France (operational since 22th June 2006)

Model:

- Vertical resolution (41 -> 46 levels, upper stratosphere & mesosphere)
- Changes of options in semi-lagrangian advection (vertical interpolation and Coriolis term computations)
- Radiation scheme : RRTM for LW (Mlawer et al. 1997) and Fouquart, Bonnel, Morcrette 2sb for SW
- Prognostic large scale precipitations and clouds scheme (Lopez, 2001): 4 new prognostic variables: ql, qi, qr, qs
- Vertical diffusion of cloud conservative variables (qt, sl)
- Tunings in shallow (reduced activity) and deep convection (ensemble entrainment enhanced)
- Modification in convective cloud diagnostic parametrization
- Adaptation of DFI to 3D grid point variables (ql, qi, qr, qs)

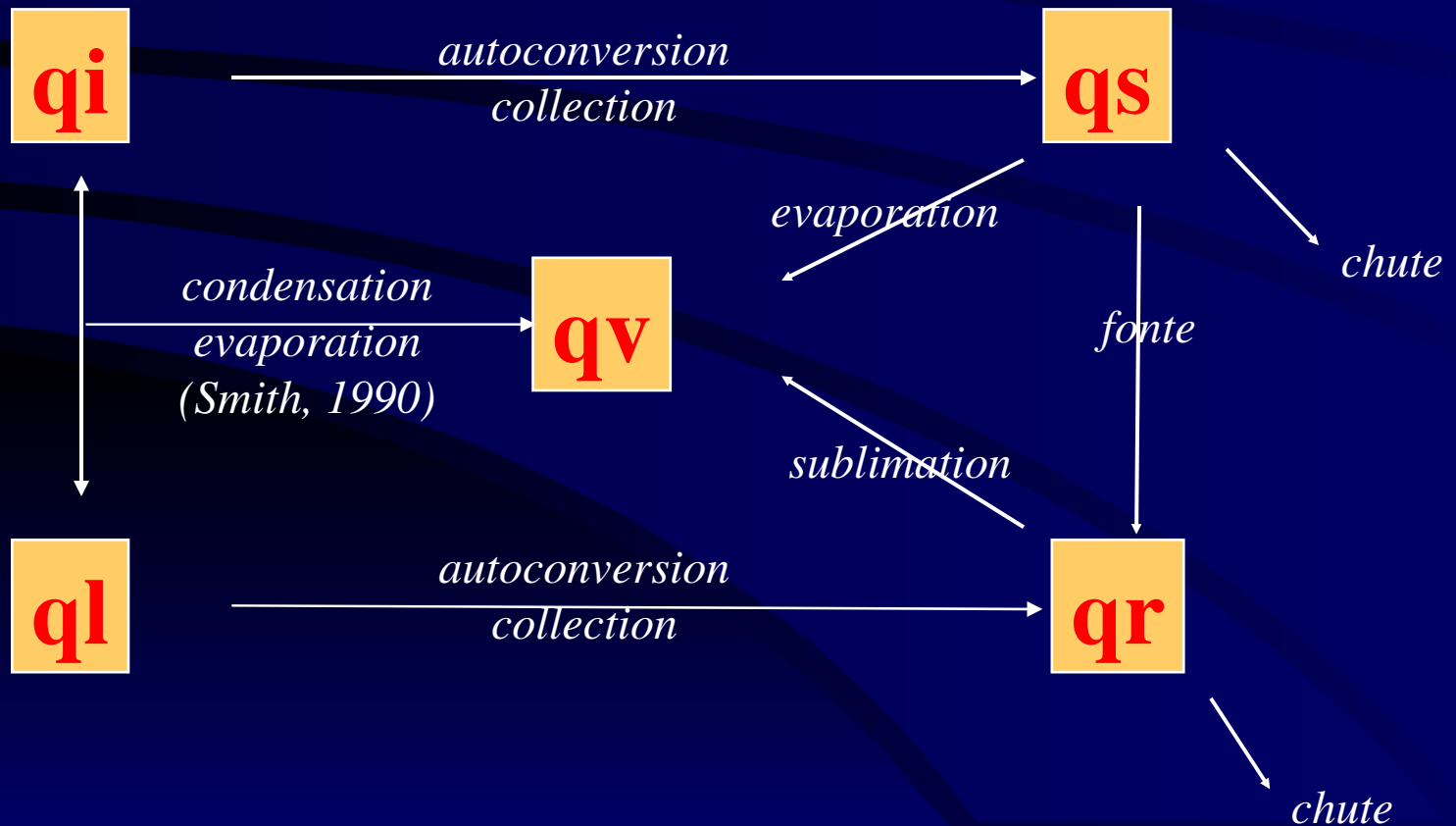
Changes in ARPEGE and ALADIN-France (operational since 22th June 2006)

Assimilation:

- Simplified physics computed at the origin point of SL trajectory
- Simplified large scale precipitation scheme removed in 4D-Var minim
- Variational quality control
- MODIS winds from TERRA and AQUA
- AMSU-A and AMSU-B from NOAA18
- AMSU-A 13 (upper stratosphere)
- GEOWINDS from MSG8 instead of MSG7
- GEOWINDS instead of SATOB for GOES (East and West), MTSAT

Généralités

- Schéma initial développé par P. Lopez (QJRMS, 2002)
- Schéma de complexité intermédiaire
- Variables pronostiques : qv, ql, qi, qr, qs



Organisation du schéma

En entrée de la physique : qv, ql, qi, qr, qs

- Ajustement microphysique (Smith, 1990) : ql*, qi*, N*
- Combinaison avec nuages convectifs pour rayonnement
- Microphysique **(schéma semi-lagrangien)** :

  a) Autoconversion (ql*/N*, qi*/N*)

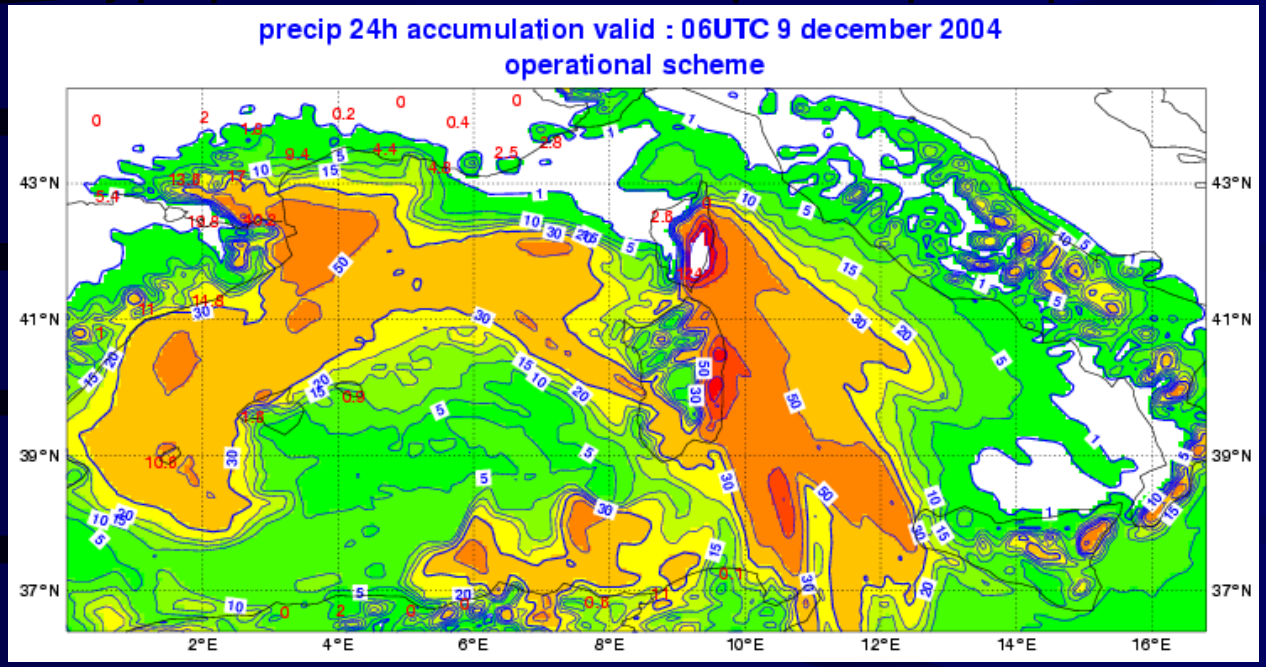
  b) Evaporation des précipitations

  c) Collection des précipitations

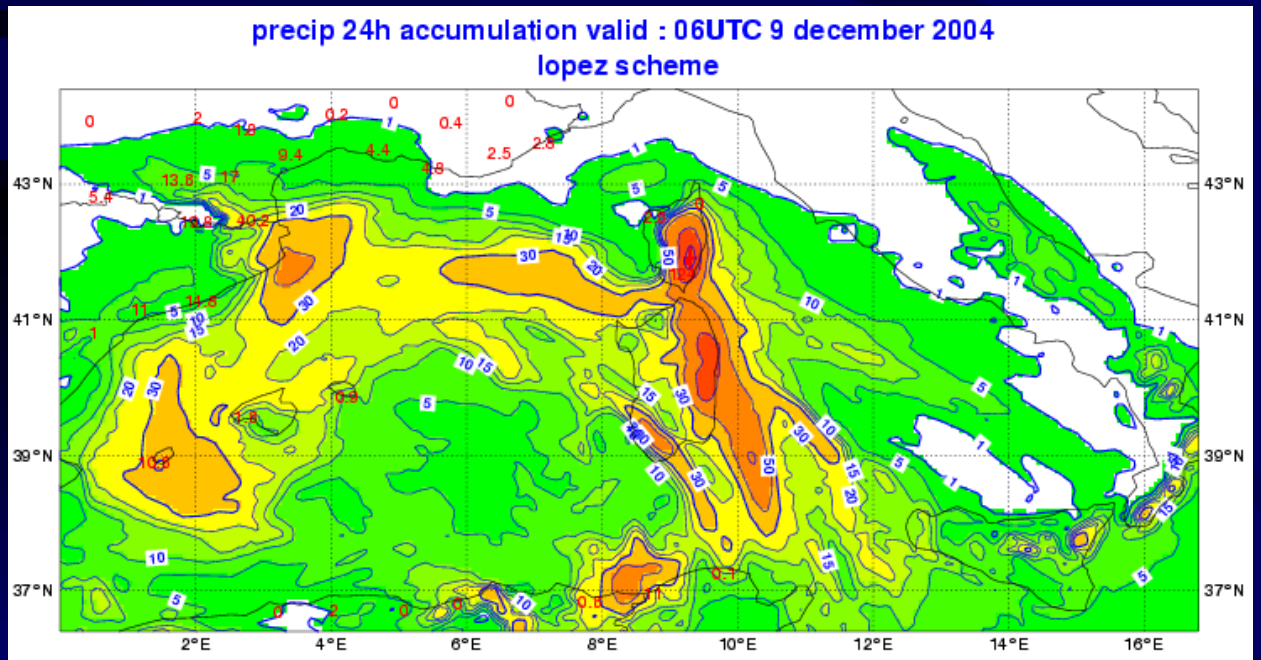
  d) Fonte des précipitations

Impact « typique » sur les champs de précipitations ALADIN

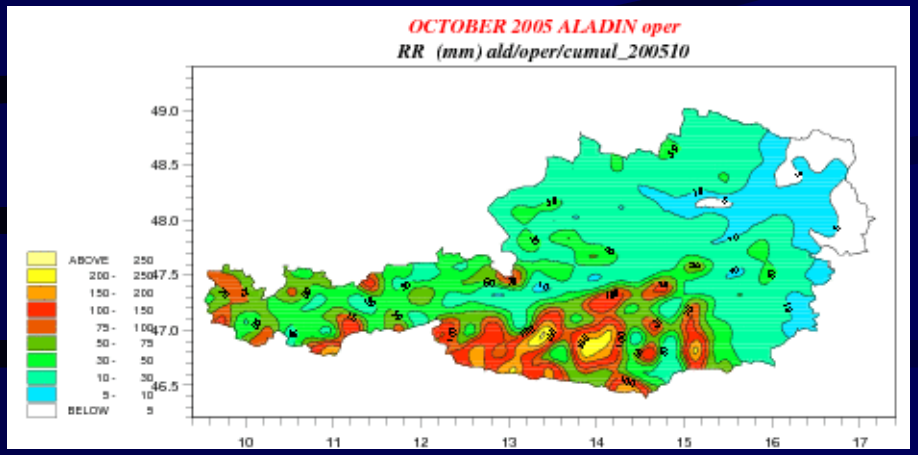
Oper



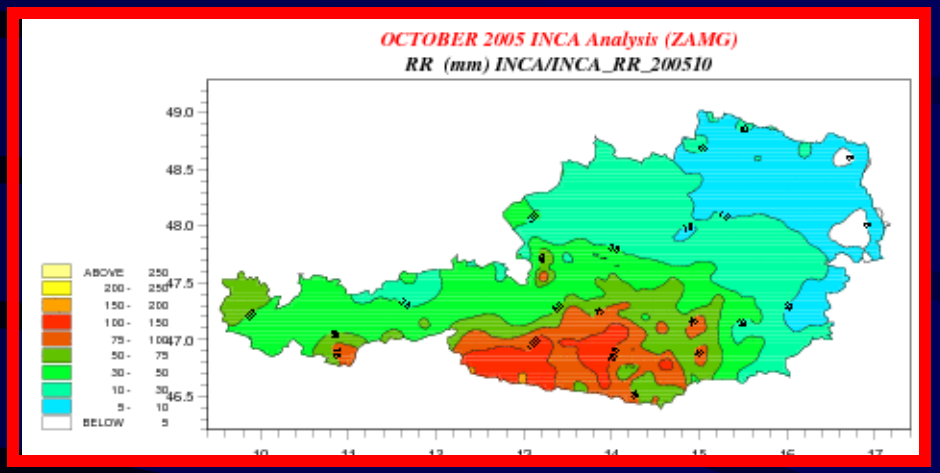
New



Oper

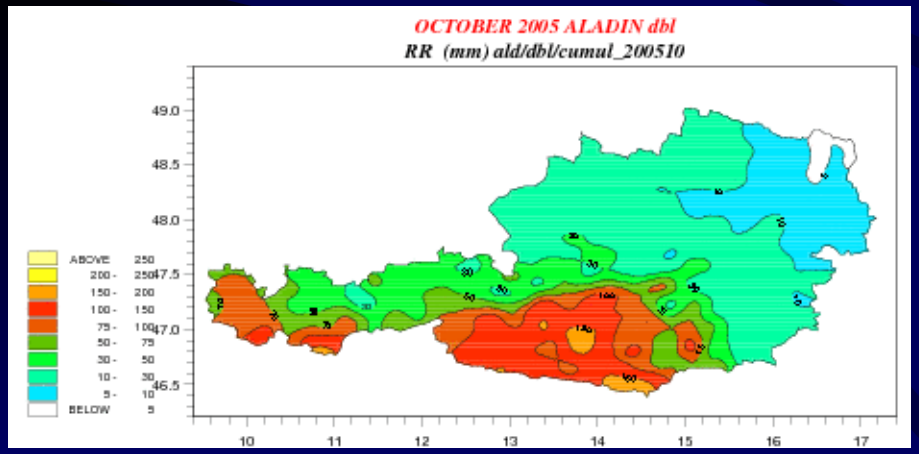


Précipitations cumulées ALADIN sur l'Autriche pour le mois d'octobre 2005



Analyse INCA (ZAMG)

Dbl



(projet AMADEUS)
(E.Bazile)