

COST ES0905 European Project

**“Basic Concepts for Convection
Parameterization in Weather Forecast
and Climate Models”**

Dmitrii Mironov

German Weather Service, Offenbach am Main,
Germany

(dmitrii.mironov@dwd.de)



Outline



- COST Action ES0905: some dry facts
- Jean-François Geleyn, the working group leader
- Proponent of intellectual diversity
- The last of the Mohicans
- Manager and good friend



COST Action ES0905

“Basic Concepts for Convection Parameterization in Weather Forecast and Climate Models” (Action Chair: Jun-Ichi Yano)

- Action provides clear theoretical guidance on convection parameterizations for atmospheric models
- Modellers and theoreticians form a “core group”
- Clear pathway for more coherent and effective parameterizations by integrating existing operational schemes and new theoretical ideas
- Increasing resolution of forecast models is one key issue
- Traditional approximations break down, description of physical processes become increasingly complex

Prior to ES0905...

- 9-10 October 2006, Zürich, Switzerland. 28th EWGLAM and 13th SRNWP Meetings. **JFG** was accompanied by a number of young researches whom he guided to the exciting world of atmospheric modelling.
- 2-6 June 2008, Toulouse, France. 4th PAN-GCSS Meeting on Advances in Modeling and Observing Clouds and Convection. **JFG** encouraged several people to joint the “convection core group” and help launch a COST Action.
- 25-27 March 2009, Prag, Czech Republic. Workshop “Entrainment and Detrainment in Convective Plumes”. Interesting talks, COST proposal was drafted.

WG3 “High-Resolution Limit”

Lead by **Jean-François Geleyn** (DM was co-leader)

- WG3 concerned with the issues arising with the convection parameterization when the model resolution increases.
- More specifically, WG3 addressed the following questions:
 - ✓ Which scales of motion should be parameterized and under which circumstances?
 - ✓ How can convection parameterizations be made resolution-(in)dependent in order to avoid double-counting of energy-containing scales of motion or their loss?
 - ✓ What is the degree of complexity of physics required at a given horizontal resolution?

WG3 "High-Resolution Limit" (cont'd)

Ghent, September 2013

WG3 Meetings:

- March 2013
- November 2012
- November 2012
- November 2012
- September 2013

Reports, presented at
ES0905 web
documents.21



JFG is discussing various alternatives with colleagues (Cambridge, UK, March 2011)

One

Should deep precipitating convection scheme be switched off at cen

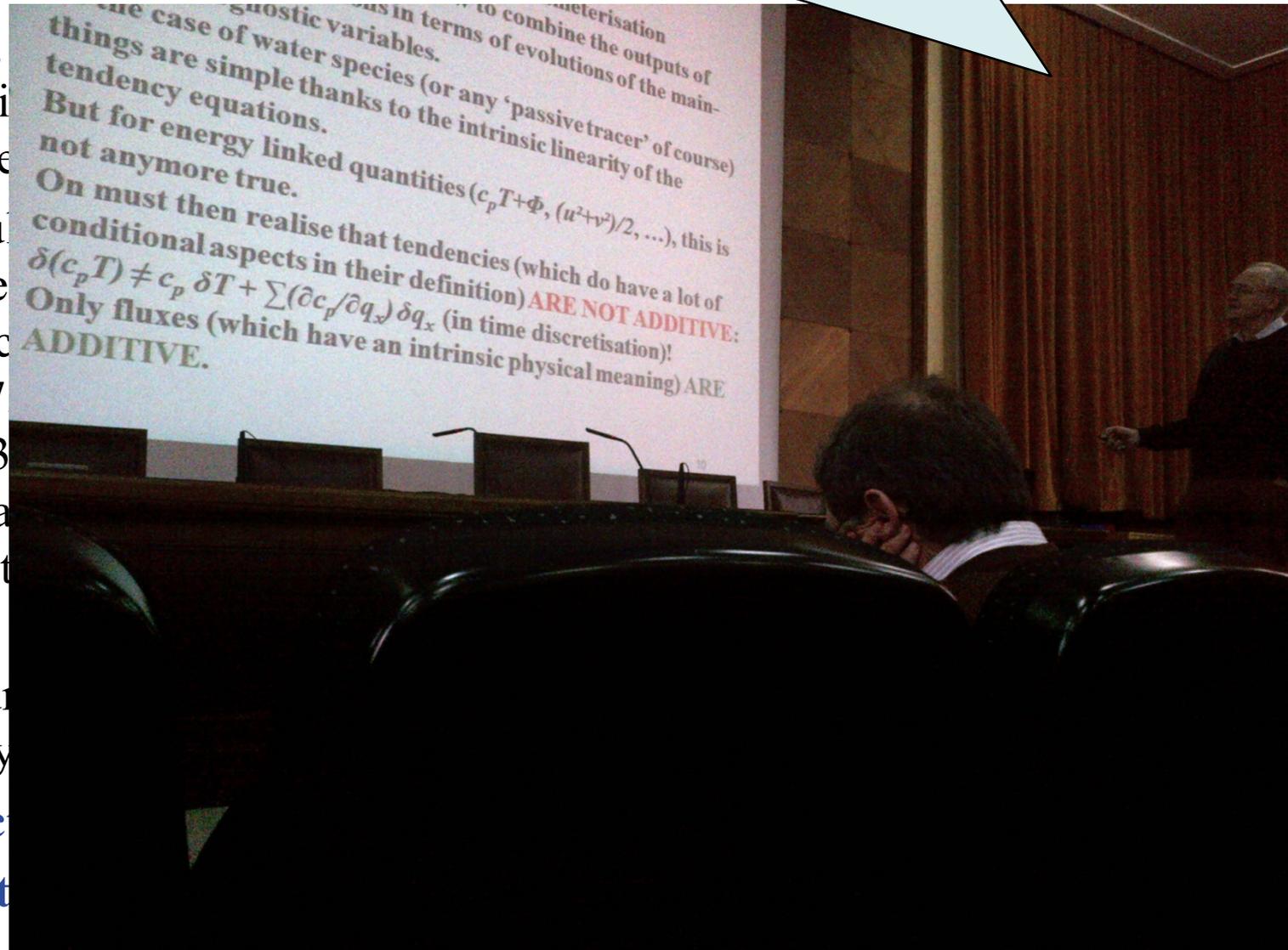
- **JFG** viewpoint kept no matter gradually be and, important physical part microphysic
- **Alternative** switched off turbulence-s closure)



JFG is making a point that tendencies are not additive in the time discretization (Palma de Mallorca, Spain, March 2013)

Non-exhaustive list of problems JFG dealt with

- **NAM-SCA**, Approximate
2012; Yano et al.
- **3MT**, Modulo
Order moment
for turbulence
Gerard 2007
Geleyn 2013
parameteriza
convection, t
France
- **TKESV**, Tur
(Machulskay
- **New convec**
- **Cellular aut**



Manager and Good Friend

IEC 1.1.1



... and a Real Gentleman

Once upon a time in Cambridge



Savona, March 2012



Great thanks, Jean-François!

