



## **coupling of gas-phase chemistry to ICTP-Regional Climate Model (RegCM)**

A. shalaby (1), A. S. Zakey (1), F. Giorgi (1), and F. Solmon (2)

(1) Abdu Salam International Center for Theoretical Physics(ashalaby@ictp.it), (2) Laboratoire d'Aerologie, Universite de Toulouse, Toulouse, France

The framework of ICTP-RegCM is coupled with full gas-phase chemistry. The main object of this work is to study the impact of ozone on regional climate change. Our gas-phase mechanism is based on (Ito et al. 2007 and Sillman et al. 2007.). This gas phase mechanism has 532 reactions, and 175 compounds, 21 compounds are transported, including NO<sub>x</sub>, O<sub>3</sub>, CO, SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, CO, HCHO, DMS, H<sub>2</sub>O<sub>2</sub>, HNO<sub>3</sub>, PAN, ISOP, CH<sub>4</sub>, ...

Full gas-dry deposition module is coupled with RegCM to compute the interactive gases dry deposition.

Different gas phase mechanisms have been tested as box model and validated using gas-chamber data. We use such comparison to select the fastest mechanism for climate-chemistry simulation. We select (Ito-Sillman) mechanism to be coupled with RegCM because it is comprehensive and fast.