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**Federal Office of Meteorology and Climatology MeteoSwiss**

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## MeteoSwiss, APN group

Swiss COSMO User Workshop, 1.11.2012



# Work Areas

- ❑ INT2LM:
  - Initial- and Boundary Conditions (COSMO NExT)
- ❑ Operational NCL plot production
- ❑ **COSMO-1:**
  - Model Dynamics
  - Test Cases

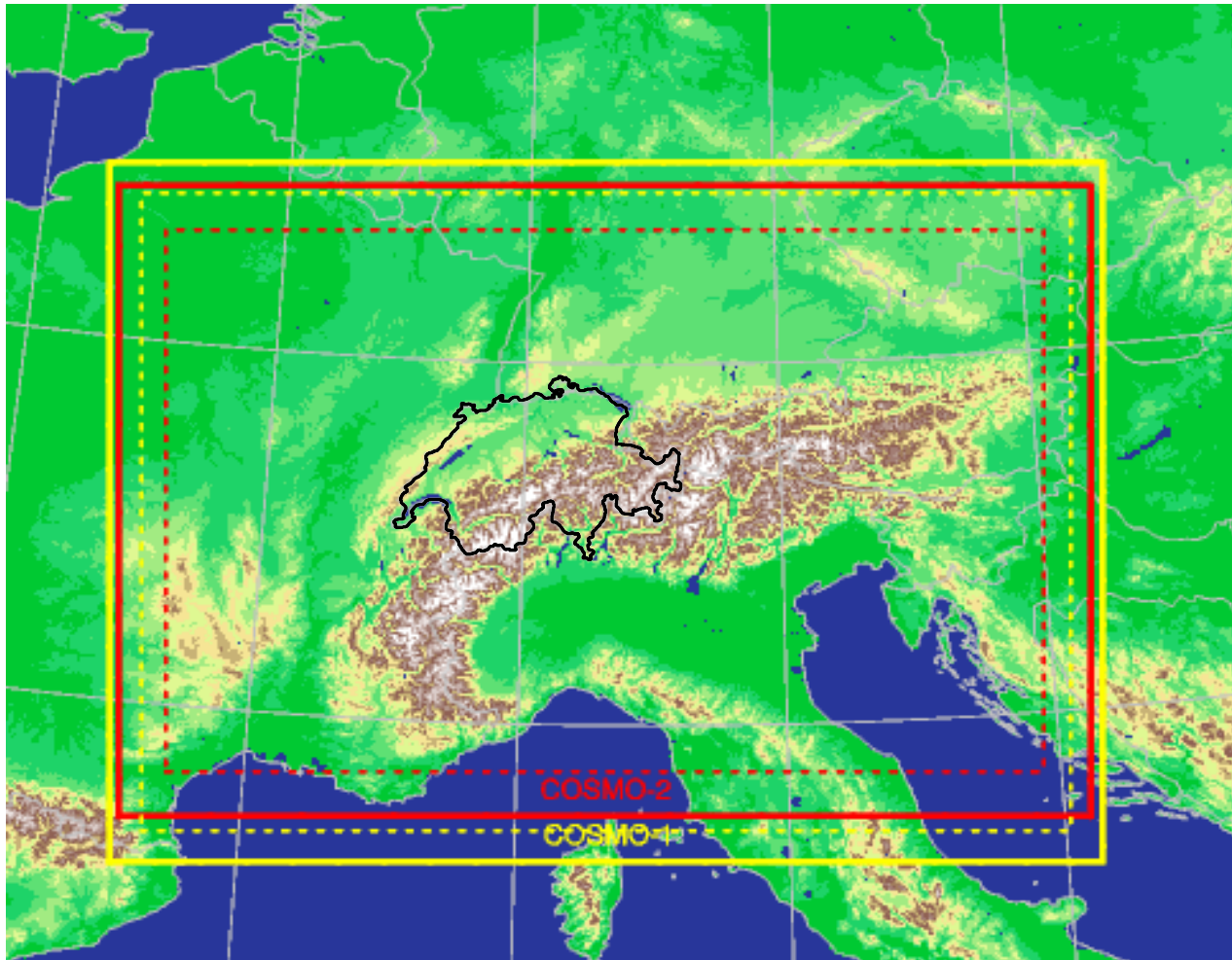


# COSMO-1 Setup (1) Domain

- $dlon = dlat = 0.01$ ,  $ie \times je = 1062 \times 774$

$$1062 = 2^5 \times 3 \times 11 + 6$$

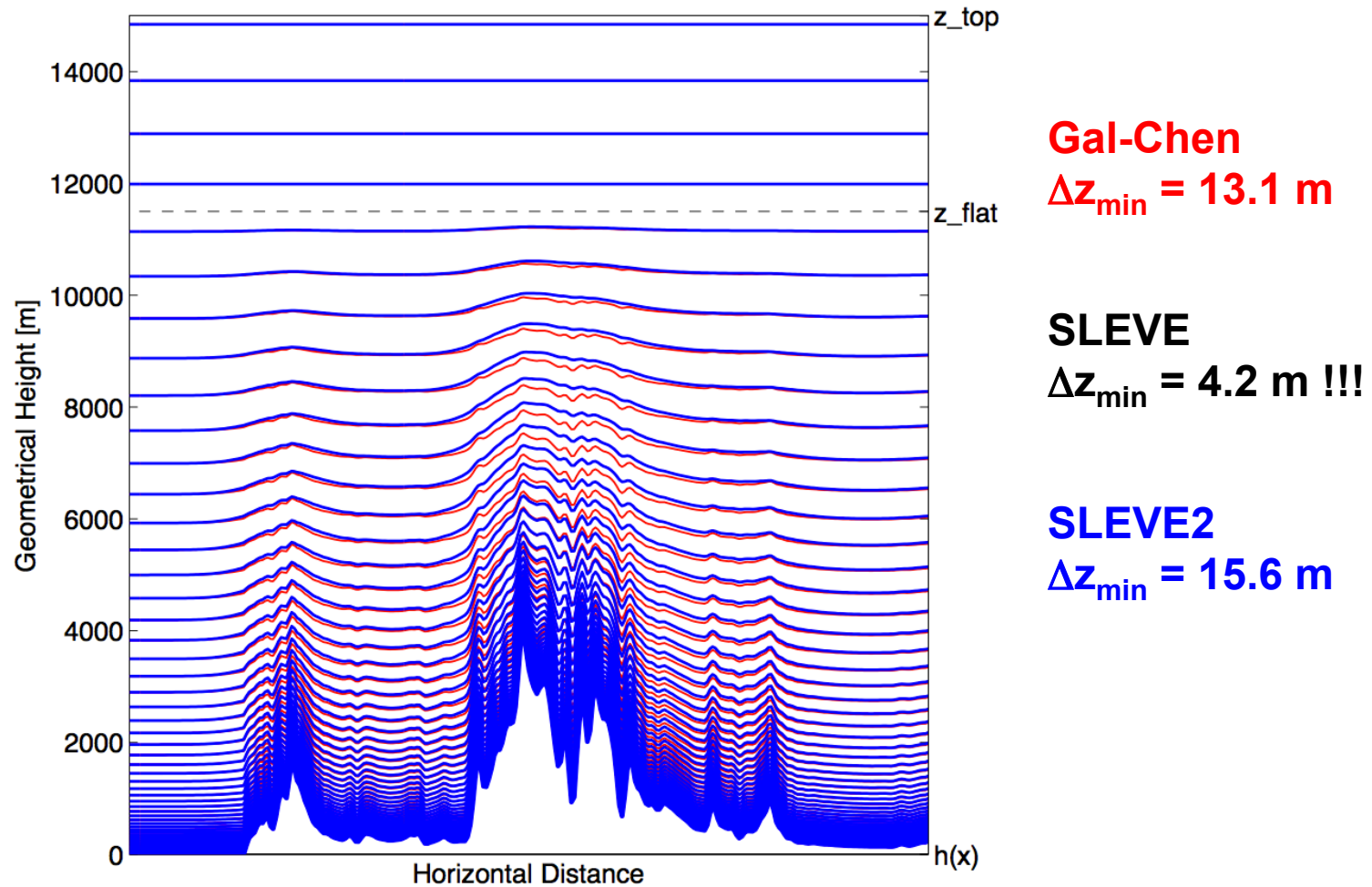
$$774 = 2^8 \times 3 + 6$$





# 80 Vertical Levels using

- Generalized **SLEVE** (after Leuenberger et al. 2010)  
(**ivctype=4, svc1=10km, svc2=3.5km, nfltvc=100, n=1.35**)





# Namelist choices: Dynamics

**Bold** for C-2 operational

**RED = C-1**

- ✓ time step (C-2:  $\Delta t = 20\text{sec}$ , **C-1:  $\Delta t = 10\text{sec}$** )
- qx advection (**BOTT2\_STRANG**)
- **NO** horizontal diffusion, but **C-1: 2D-Smagorinsky** ( $l_{\text{diff\_Smag}}=T$ )
- ✓ upper boundary condition ( $\text{nrtau}=5/3$ )
- $\text{ldyn\_bbc} = T$ ,  $\text{itype\_bbc\_w} = 1/2/14$  (**Bottom Bound. Cond. for w**)
- $\text{ltadv\_limiter} = T / F$  (T not tested with C-1)

**New code** with **new** fast wave (FW) solver in COSMO V4.23:

**$\text{i\_type\_fast\_w}=2 + \text{irefatm}=2$**

- **SLEVE2** ( $\text{ivctype}=4$ )



# Namelist choices: Physics

**RED = C-1**

- Radiation:** Same as COSMO-2 but:
- Calling frequency (**0.1h** instead of **0.25h** for COSMO-2)
- Convection:** **only shallow** convection parameterization
- SSO:** **off** (on for COSMO-2)
- Turbulence:** **1D TKE + horizontal Smagorinsky**
- Land Surface:** Same as COSMO-2 and 7
- **NO** Flake, Tiles, Urban or Multilayer snow model
- Microphysics:**
- **4-category scheme (ice, rain, snow, graupel)**