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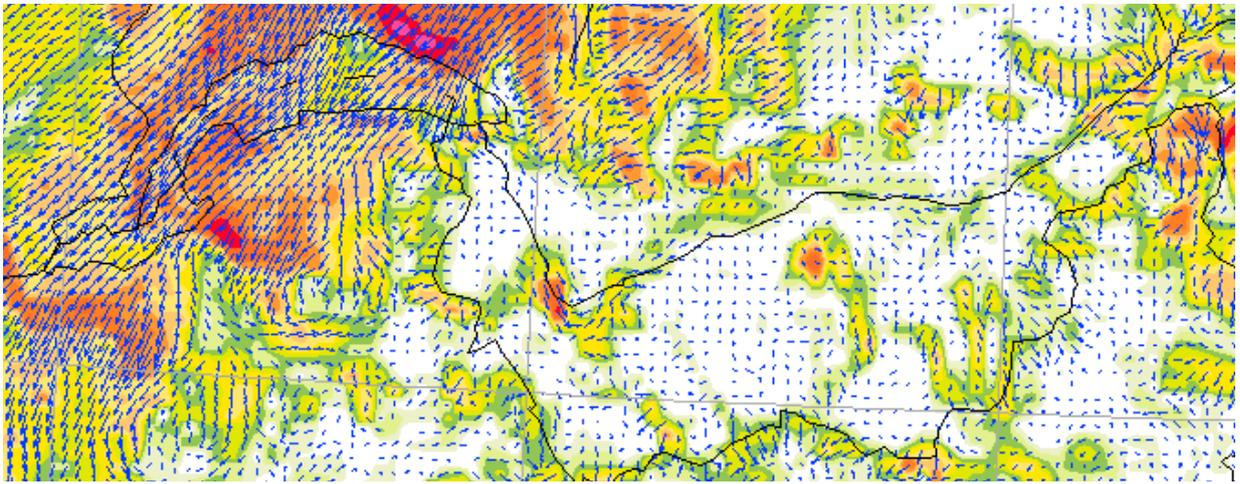


**Factsheet**

# Future NWP model systems overview

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MeteoSwiss develops new short-range  
numerical weather prediction (NWP)  
systems to be operational in 2016



## COSMO-1

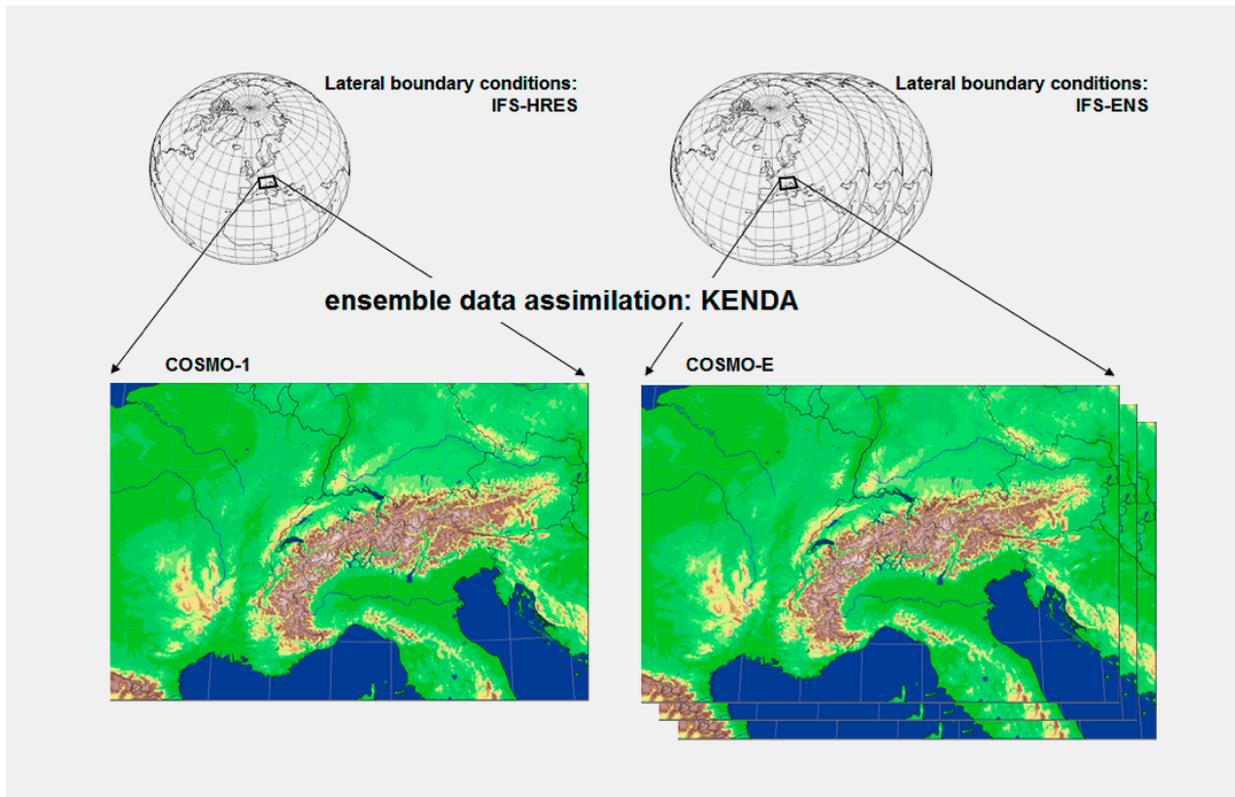
Locally more detailed and more accurate deterministic forecasts out to +24 hours.

## COSMO-E

Ensemble forecasts providing information on forecast uncertainty out to +120 hours and complementing the deterministic COSMO-1 forecasts out to +24 hours.

## KENDA

Better data assimilation system, eventually including more observational data (e.g., satellites), resulting in more accurate analyses and forecasts.



#### **COSMO-1 facts**

- deterministic forecast with very high spatial resolution (1.1 km grid size) for Alpine area
- rapid update cycle 8 times per day up to +24 hours, at least one run with longer leadtime
- initial conditions from KENDA (see below)
- boundary conditions from ECMWF IFS-HRES

#### **COSMO-E facts**

- ensemble forecast with convection-permitting resolution (2.2 km mesh-size) for Alpine area
- forecasts twice a day up to +120 hours
- 20 members plus control run
- initial condition perturbations from KENDA (see below)
- boundary condition perturbations from ECMWF IFS-ENS
- Stochastically Perturbed Physics Tendencies (SPPT) to represent parameterization uncertainties

#### **KENDA (Ensemble Data Assimilation) facts**

- new ensemble data assimilation system based on the Local Ensemble Transform Kalman Filter (LETKF)
- quasi-optimal and flow-dependent combination of observations and model forecasts based on error statistics
- provides ensemble initial conditions for COSMO-E and a deterministic initial condition for COSMO-1
- assimilated information: Initially conventional observations (TEMPS, SYNOP, AMDAR, WINDPROFILER, SHIPS, BUOYS), later also new remote sensing observations such as e.g. RADAR volume data, ground-based remote sensing, GPS, satellite radiances

#### **Milestones**

**Mid 2015:**  
start of pre-operational runs

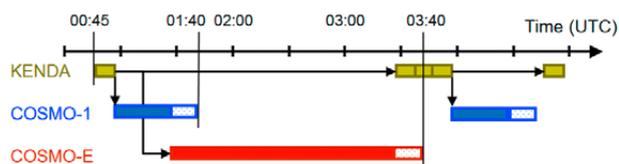
**Early 2016:**  
start of operational runs

**Mid 2016:**  
discontinuation of COSMO-2  
and COSMO-7



### Currently planned schedule

(example for 00 UTC forecast runs)

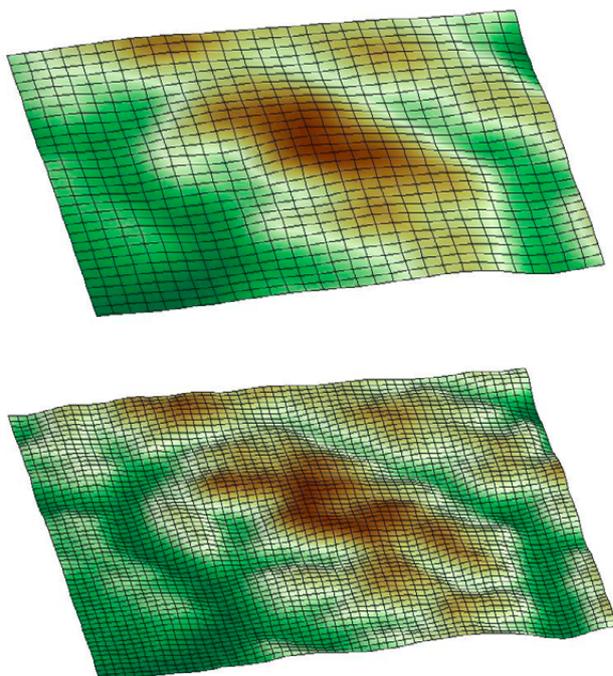


Schedule for KENDA, COSMO-1 and COSMO-E model runs (filled) including post-processing and dissemination (dotted).

– all COSMO-1 products available  
~1:40h after analysis time,  
i.e. 01:40, 04:40, ..., 22:40 UTC

– all COSMO-E products available  
~3:40h after analysis time,  
i.e. 03:40 & 15:40 UTC

### Orography



The Bernese Oberland as represented in COSMO-2 and COSMO-1, respectively.