

Synoptics in Motion:

Improved satellite loops for analyses

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(to recognize the presenter)

Meteosat Second Generation

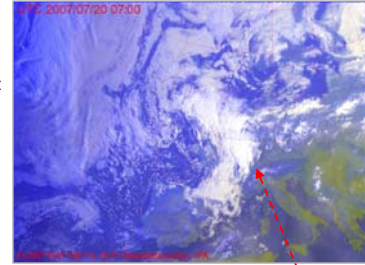
- over Equator; MetS-9 and MetS-8 (rapid scan)
- one scan every 15 min or 5 min (rapid scan)
- Spinning Enhanced Visible Infra-Red Imager (SEVIRI at 100 rpm) with 12 channels
- raw data from EUMETSAT

Processing at DLR-IPA

- combination of 4 channels (HRV; 0.6 μm visible; 0.8 μm, 10.8 μm infra-red)
- faint dotted grid and COPS area perimeter
- stereographic weather map projection

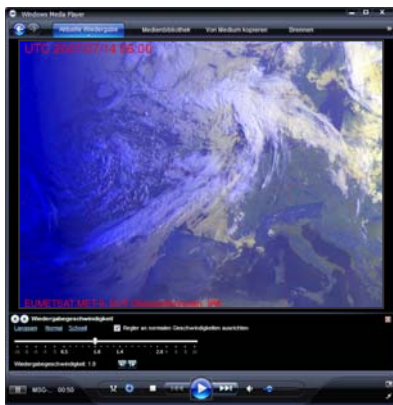
Basic Idea: Look at loops

- human eye-brain-system well tuned for motions
- watch discernible phenomena (Anaxagoras [-460]: *ὄψις γὰρ τῶν ἀέθρων τὰ φαινόμενα*)
- variable speed provides different insights and helps to distinguish motion at various levels
- high speed-ups (11250-, 22500-, 45000-fold)
- sufficiently large overview
- overlapping month-long scenes
- clear distinction day vs. night
- intuitive trajectories towards COPS-region



20 July: Will Black Forest invigorate the advancing squall-line?

Which player for the loops?



MS-Media-player supports relative speeds from 0.5 to 2.0

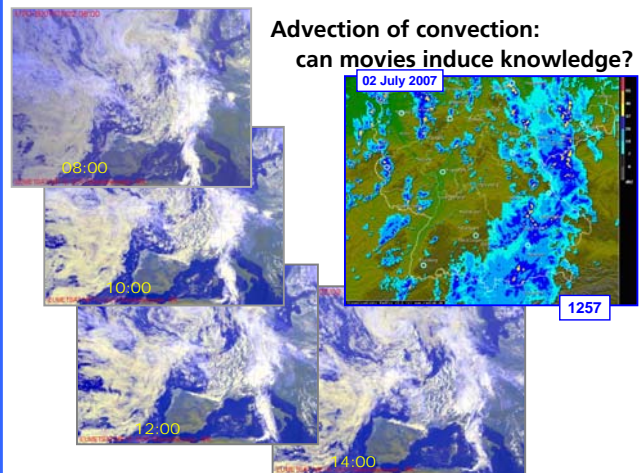
Standard loop speed: 25 frames/s

Available loops:

- MSG-COPS-2007full06.avi
- MSG-COPS-2007mid06mid07.avi
- MSG-COPS-2007full07.avi
- MSG-COPS-2007mid07mid08.avi
- MSG-COPS-2007full08.avi

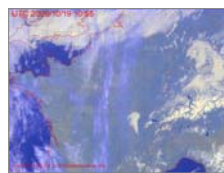
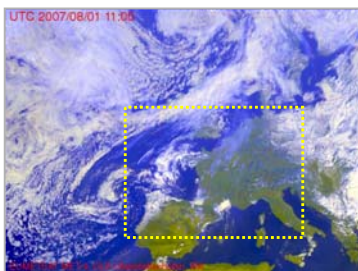
14 July: Isolated thunderstorm over Black Forest within 30 h?

Advection of convection: can movies induce knowledge?

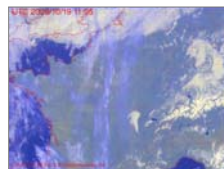


Planned: Rapid scans displayed in a quarter of the area

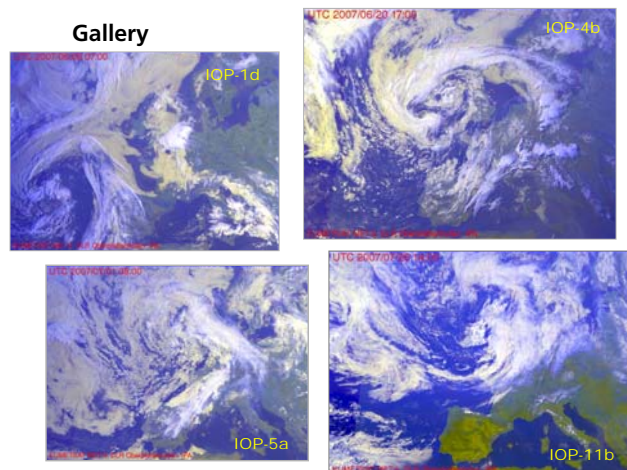
- half of spatial extent
- a third of time-interval



former setting



Gallery



Vague vision or naive wish ?

Hypothesis:

Combination of video clips with human eye-brain system has potential to inspire research questions; steps:

- complete archive of suitably resolved images
- European area on weather map projection with suitable geographic grid
- apply parallax correction to obtain correct locations
- produce overlapping 2-week video-clips (4 per month)
- find software for variable speed and single frame advance (forwards and backwards)
- provide results within an internet portal
- make wide use in classrooms (schools & universities)

Acknowledgements:

Bernhard Mayer provided the Unix-script to obtain compact video clips in avi-format. The inspiration to look at extended loops of satellite imagery stems from my student days in the late 1970s with Prof. Günter Warnecke (FU Berlin), who extensively used the then novel loops from geostationary satellites for his undergraduate courses.

Reference:

Anaxagoras o.K., -460: Fragment B21a in edition of pre-Socratesian philosophers by H. Diels and W. Kranz, 3 vols, 6th edition, Berlin 1951/52.