AEMET's Presentation in CWG 2014

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Enhancing/improving use of Meteosat NWC SAF products (and channels) in Operational intranet Page: "Pre-convective environment" (*)

A short summary of recent/coming soon NWC SAF improvements (**)

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(**) NWC SAF AEMET's Dev. Team/DIS (Dep. Infr. Systems) + Other NMSs NWC SAF Dev. teams
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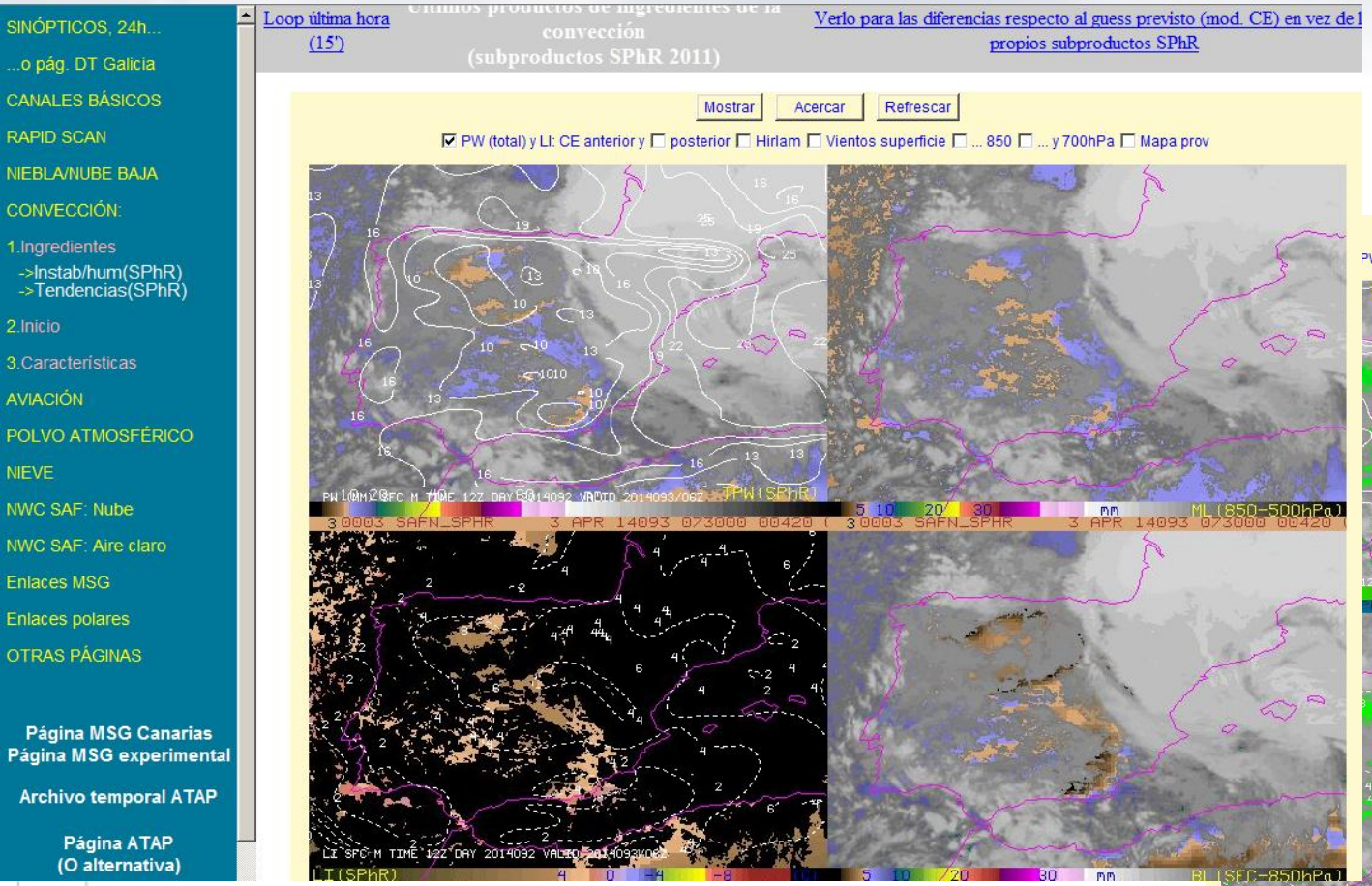
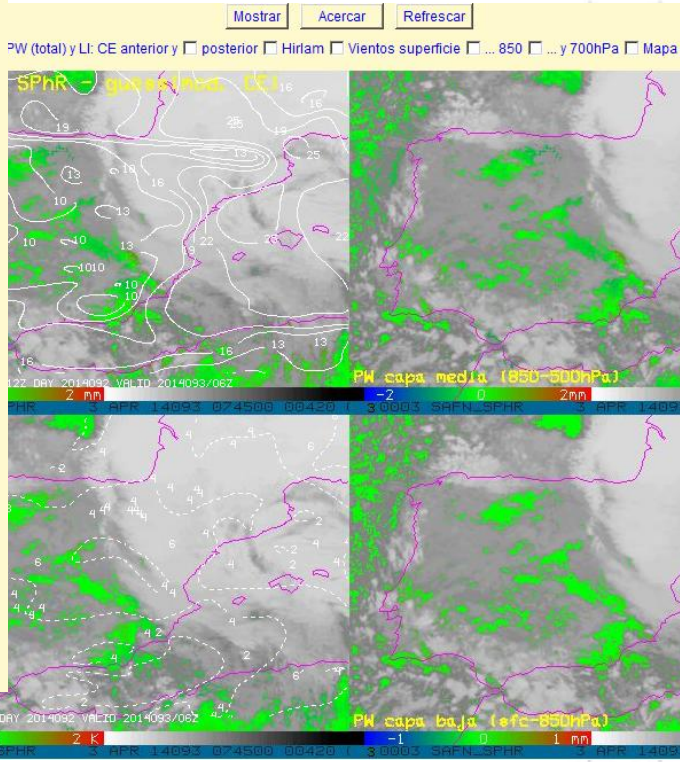
Enhancing/improving usefulness of Meteosat NWC SAF products (and channels) in Operational intranet Page: "Pre-convective environment"

- NWC SAF SPhR products: LI, PW (x3), plus separated guess-model differences.
- Now proposed: revised color enhancements, single display (guess-model differences as overlay).
- New development as alternative: 3 instability indices, TPW.
- Ideas as complement:
  - RGB display using SPhR PW subproducts.
  - "Airmass" and other RGB channel-based displays.
- Further possibilities:
  - Display of Tendencies: diurnal evolution in LI instability wrt. mean of last few days or climatology.
  - Use of SPhR profiles (+ new parameters/possibilities) in Page or/and in new system NinJo.

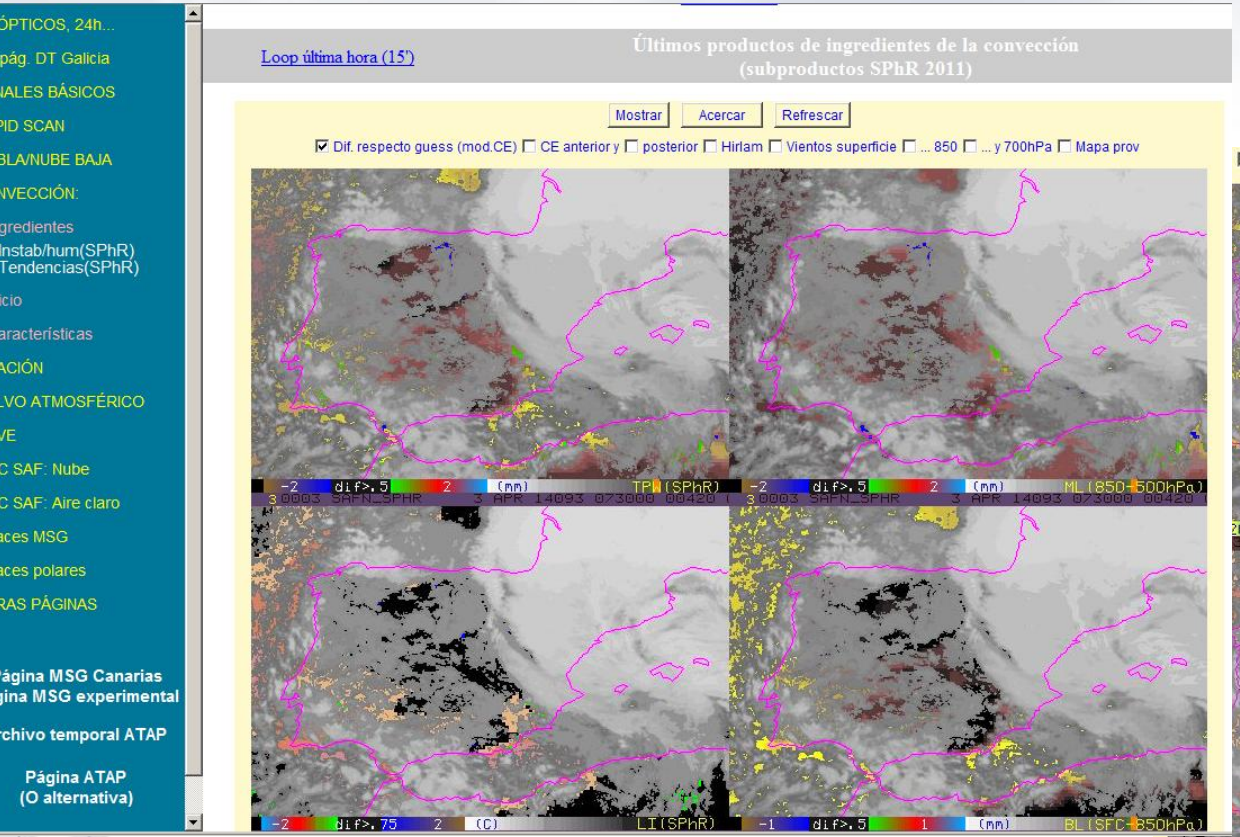
(Still) operational intranet Page, NWC SAF SPhR products: LI, PW (x3), equivalent display with guess-model differences

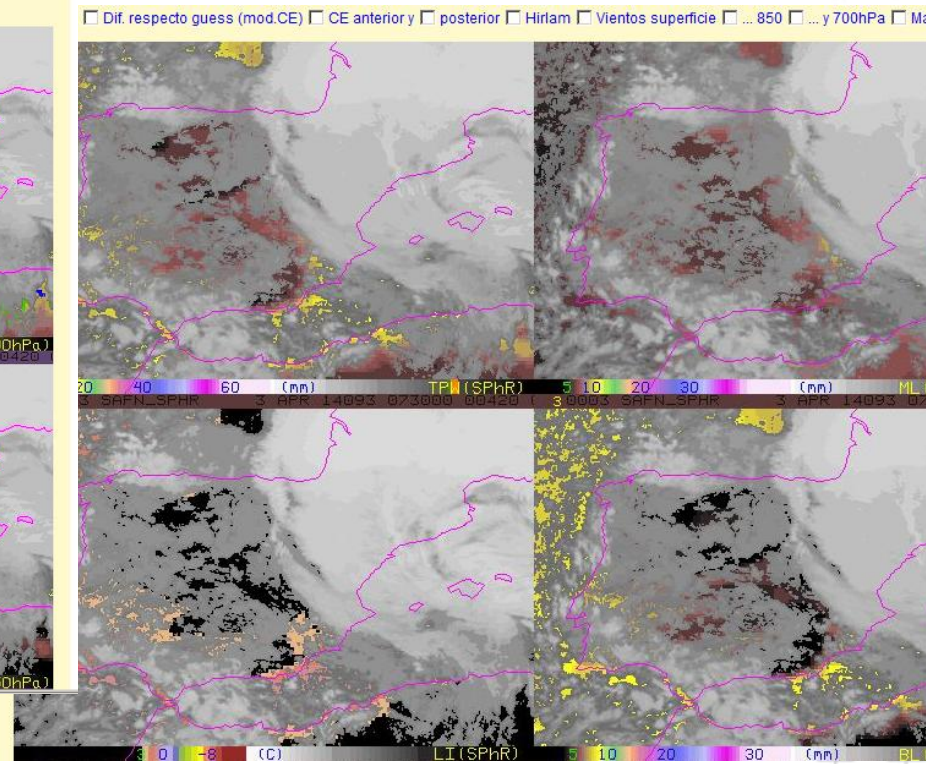




- Including model fields information in form of switch on/off overlays, and last hour loops. Default colortables.
- There is an addtional complementary sub-entry for tendencies.

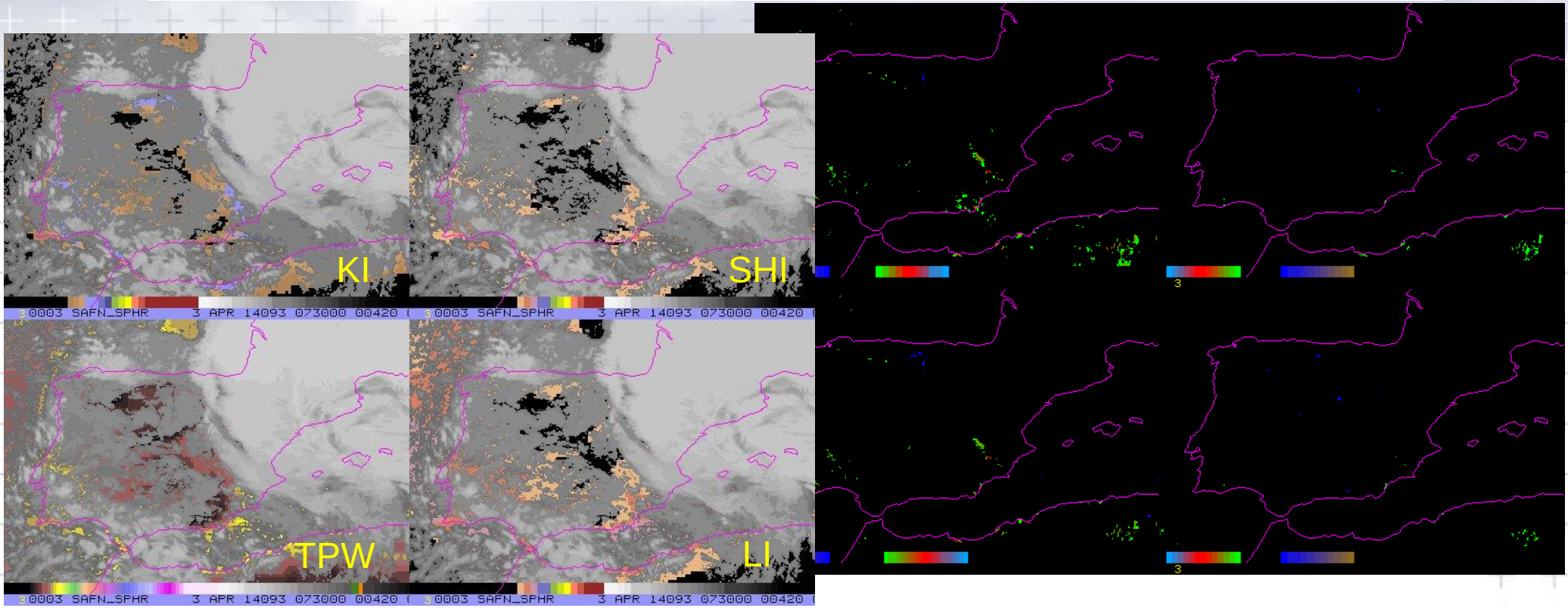
Now proposed: revised color enhancements, single display (guess-model differences as optional overlay)





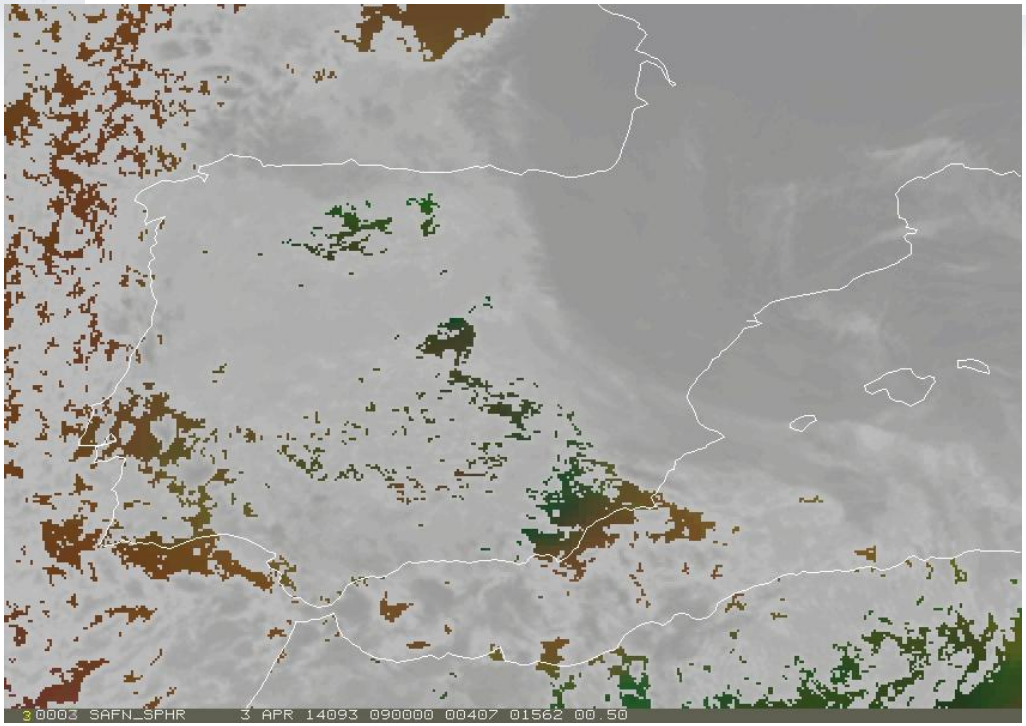
- PW: new colortable. LI: only significant or close-to. Guess differences: still unique colortable, not-significant values are not shown, increased contrast.
- Graphic model overlays: possibly no more needed, could be replaced by H.R.model value-added fields (e.g. precipitation or storm probability).

New development as alternative: 3 instability indices, TPW



- Display generation will be improved. Would replace 3 x PW + LI. Feedback needed before operational.
- All instability indices (normally) provided in the SPhR: Its slight differences are of meteorological significance. They could also help interpreting guess-differences (with some knowledge and addtional information, has to to be studied and improve characterization).
- TPW as most significant (certainly also most accurate), is the only information content included in this proposed display, layer information should be still shown … differently.

Ideas as complement (I):
RGB display using SPhR PW subproducts

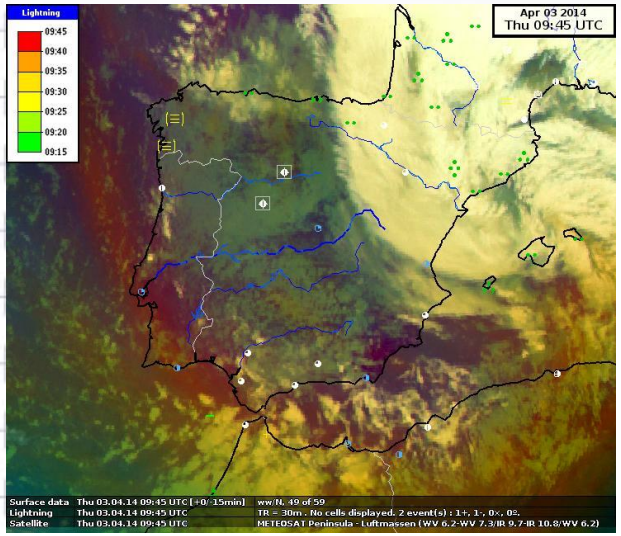


RGB=BL/ML/HL (each: 2/3 full range)

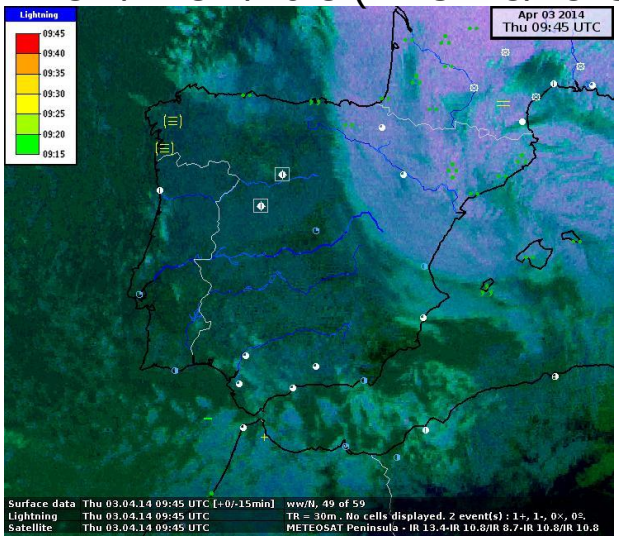
- Goal: complementary display for ingredients, focus here on convection classification supposing it will initiate. Model wind at least 2 levels (or vertical shear) could be overlaid here instead of on basic display.
- Studies just starded. idea by now is SPhR R-G-B = BL-ML-HL (3 “independent” information elements), a 3D (rather rough, vertical) image of water wapor distribution (+ cloudiness).
- Work needed: RGB color normalisation, characterization and guidelines for interpretation. BL weight is much related to groud elevation, a possibility is to “elevate” BL (at the expenses of ML) according to ground level up to some 1000m.

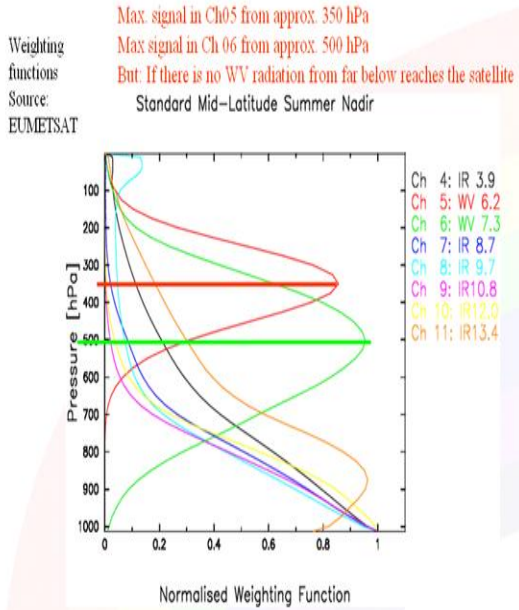
Ideas as complement (II):
"Airmass" and other RGB channel- based displays

RGB= Airmass



RGB (just an early example)=
Dif13.4/Dif8.7/10.8 (Diffs.: -5/+5ºC)



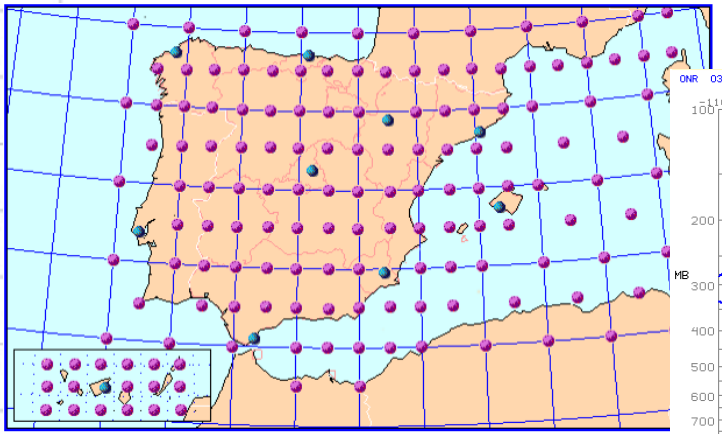


- Airmass RGB (well known) also includes 3D clear-air information. Already used at synoptic level at 3h intervals, useful at high frequency/resolution?

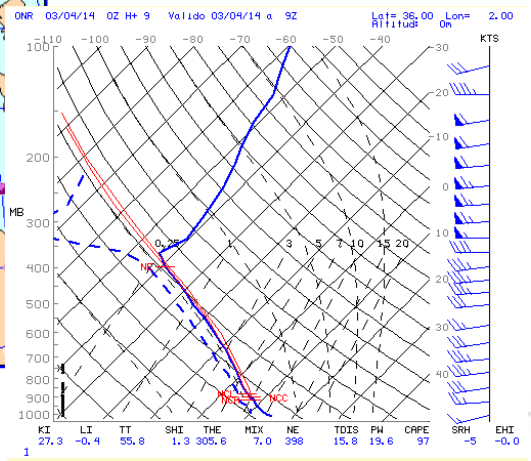
- Another goal, using channels: complementary display for ingredients, now to help understanding relevant guess-difference features in terms of where the information comes from, beyond the rough vertical PW subproducts distribution.
- Slightly more than an idea by now. Using window or slightly absorbing channels (as at least IR10.8 and 12.0, 8.7 and 13.4). New system NinJo provides good tools to work on RGB and is suited for investigating and developing this issue.

Further possibilities:

- **Display of Tendencies: diurnal evolution in LI instability with respect to mean of last few days or climatology.**
  - *Shows product and, for LI: tendency in 24h and 3h plus – since 6z: variable duration, moment heavily dependent.*
  - *Maybe the "most realistic" approach: refer this last to mean of model LI last few days.*



(Modelo elegido: HBR, pasada 00)



- **Use of SPhR profiles (+ new parameters/possibilities) in Page or/and in new system NinJo.**
  - *NWC SAF SW can be configured to provide profiles.*
  - *Forecast profiles (as level-by-level tests) are already input to Op. Fcst Soundings page (see left), and are also being integrated to NinJo (its Sounding Tool has much more possibilities).*

Summary of recent/coming soon NWC SAF improvements (I)

(EUMeTrain NWC SAF Event week 2013,
Recordings/slides available: http://eumetrain.org/events/nwcsaf_2013.html
or NWC SAF page at www.nwcsaf.org)

- Recent: 2013. Only PPS (polar) delivery in 2014. 2015: important changes.
- 2015: "GEO extension" (not only METEOSAT).
- New products 2015: +1h extrapolations. CMIC (Cloud Microphysics). Convection Initiation and Storm Probability.
- Cloud top products: water phase (2013). 2015: drop effective radius, optical thickness, liquid water path (CMIC). Improving height assignment near tropopause (2015).
- Precipitation products (Precipitation probability Convective rainfall): Based on cloud physical properties (PCPh, CRRPh – 3 products, 2013).

Experimental example NWC SAF global coverage (Cloud Type)

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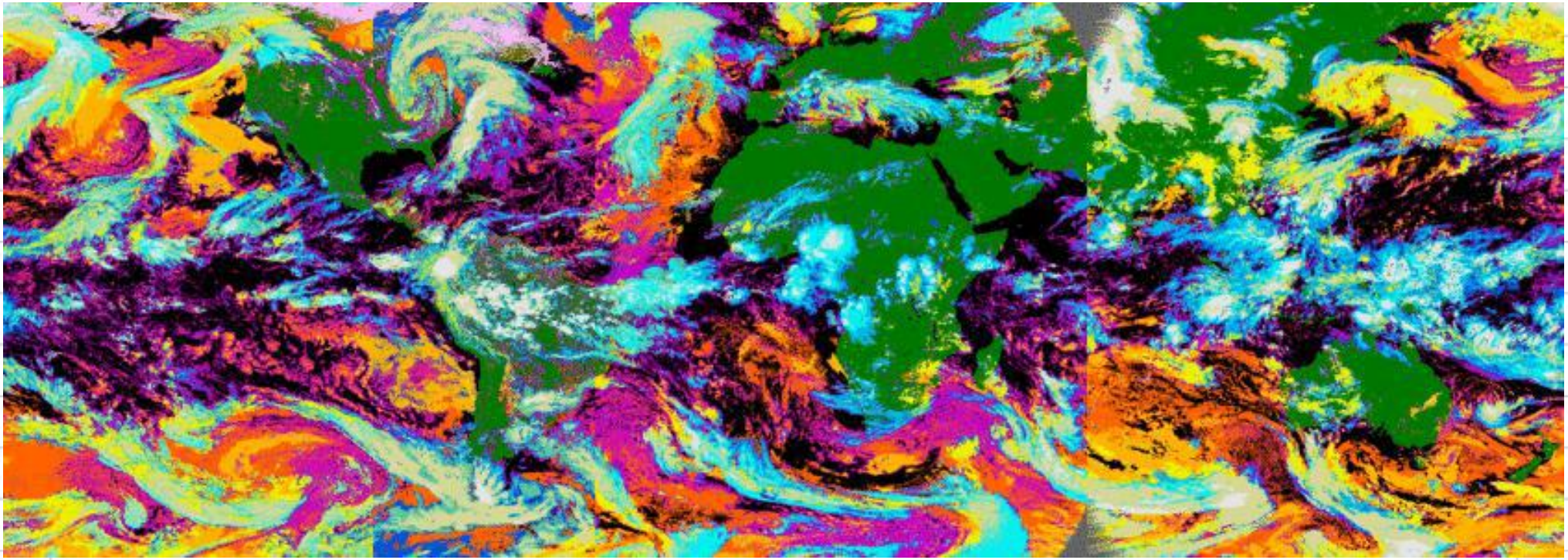

Summary of recent/coming soon NWC SAF improvements (II)

(EUMeTrain NWC SAF Event week 2013,
Recordings/slides available: http://eumetrain.org/events/nwcsaf_2013.html
or NWC SAF page at www.nwcsaf.org)

- Clear air products (from sounding physical retrieval, SPhR): All (hybrid) model levels can be used for guess (2013). Evaluation of new instability indices and other preparations for MTG.
- High resolution Wind products: trayectories, adaptations for assimilation in NWP (2013). Tuning to GOES-N, use of CMIC properties (2015).
- Convective cells (RDT until 2015): Overshooting tops detection (2013). Improved motion (2015). Convection Warning + Convection Initiation (2015 onwards). MTG studies
- Image automatic analysis (ASII and ASIINWP, CM and imagen segmentation): Towards automatic creation of image features (2015).

Many thanks !