# Session 13
# Aerosol typing

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Seed talk:
        Lucia Mona / CNR: aerosol type inventory (update)
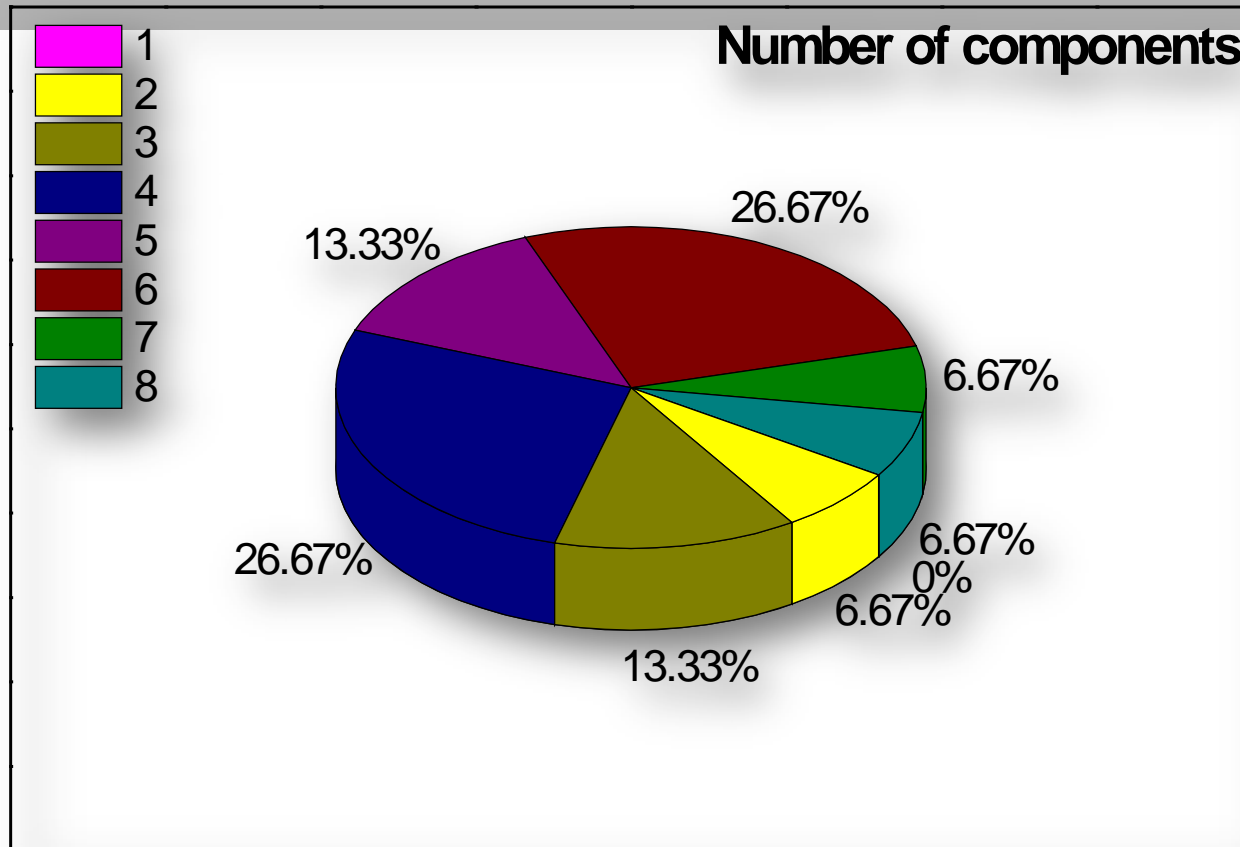
# Aerosol Typing
## *Main Points 2015*

➢ Recognize *Two Approaches*, in some cases two **steps**:
  ➢ retrieved optical properties & interpretive types
  ➢ information content differs between sensors
  ➢ Information content is function of environmental & aerosol conditions

➢ Advantages of integrating data from *Multiple Sources*

➢ Need for much more *Validation Data*

➢ **Inventory** to get overview of different concepts
  ➢ Hierarchical structure / not invest too much into detail

➢ Need to consider **different usage** with possibly different requirements
  ➢ model validation
  ➢ data assimilation
  ➢ policy support / public communication

# Properties which can be retrieved

➢ Spectrally-dependant AOD
  ➢ Size estimate (effective radius, fine / coarse mode AOD, Angström coeff.)

➢ Fraction of AOD by non-spherical particles
➢ Mineral dust AOD (thermal IR)
➢ Degree of depolarisation (lidar)

➢ Single scattering albedo (UV)

➢ (average / effective) layer / plume height (stereo, IASI)

# Number of components 2015 inventory



**Even if different the aerosol typing procedures typically classify aerosol in 4-6 types. Never exceeding 8 components.**

**The nomenclature is very heterogeneous among different platforms.**



**6 main classes could be identified grouping the different nomenclatures.**

# Where we ended discussions in 2015

**A proposal for basic components (interpretive schemes)**

A set of 6 pure aerosol components + their mixtures

A first proposal could be:

**Mineral dust**

**Biomass burning**

**Marine**

**Urban/industrial**

**Volcanic ash**

**Sulfates**

(or equivalent names).

# Seed *questions*

• **is it possible to find translation rules between the two nomenclature approaches (physical observables vs interpretive composition)?**

• **can the inventory help to harmonize the mapping of retrieved properties and interpretive composition?**

• **how can we benefit from integrating multiple sources?**

• **how can we validate aerosol type information and their uncertainties?**

• **which (new) validation data for aerosol type information do we need?**