

Session 12

Air Quality from Satellites

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Seed talks:

Lorraine Remer/ UMBC: VIIRS air quality

Olga Kalashnikova/ NASA-JPL: polarimetric characterization

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Air Quality from Satellites

Main Issues

1. Obtaining the **near-surface AOD** component
2. **Speciation** – constraining the aerosol type
3. **Spatial Resolution** – especially in urban areas
4. **Temporal Resolution** – often big diurnal variations

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Approaches to Date

1. Obtaining the **near-surface AOD** component
 - Parse column AOD using *model vertical profile*
 - Active sensor (*lidar*) directly or as model constraint
2. **Speciation** – constraining the aerosol type
 - Use *model aerosol type* mass ratios, initialized by *inventory*
 - Map general aerosol-air-mass types with *multi-angle obs.*
3. **Spatial Resolution** – especially in urban areas
 - Aim for *highest possible* resolution retrievals
4. **Temporal Resolution** – often big diurnal variations
 - Use *model / ground-based* to represent
 - *Geostationary* measurement platform (e.g., TEMPO)

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Seed Questions

Where do we go from here in each of these areas?

1. Obtaining the **near-surface AOD** component
2. **Speciation** – constraining the aerosol type
3. **Spatial Resolution** – especially in urban areas
4. **Temporal Resolution** – often big diurnal variations