

# Sensitivity of IASI measurements to boundary layer pollution

## Theoretical analyses and case studies from IASI operation

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Pollution ( $O_3$ ,  $CO$ ,  $CH_4$ ) constrained to BL  $\longrightarrow$  ? Detection ability at TOA ?

Forward simulations (Atmosphit, ULB)

Focus on thermal properties of surface and surface air temperature system

- influence of thermal contrast ( $T_{skin} - T_{surface\ air}$ ) on radiative transfert
- influence of air temperature profile (inversion layer in BL in particular)

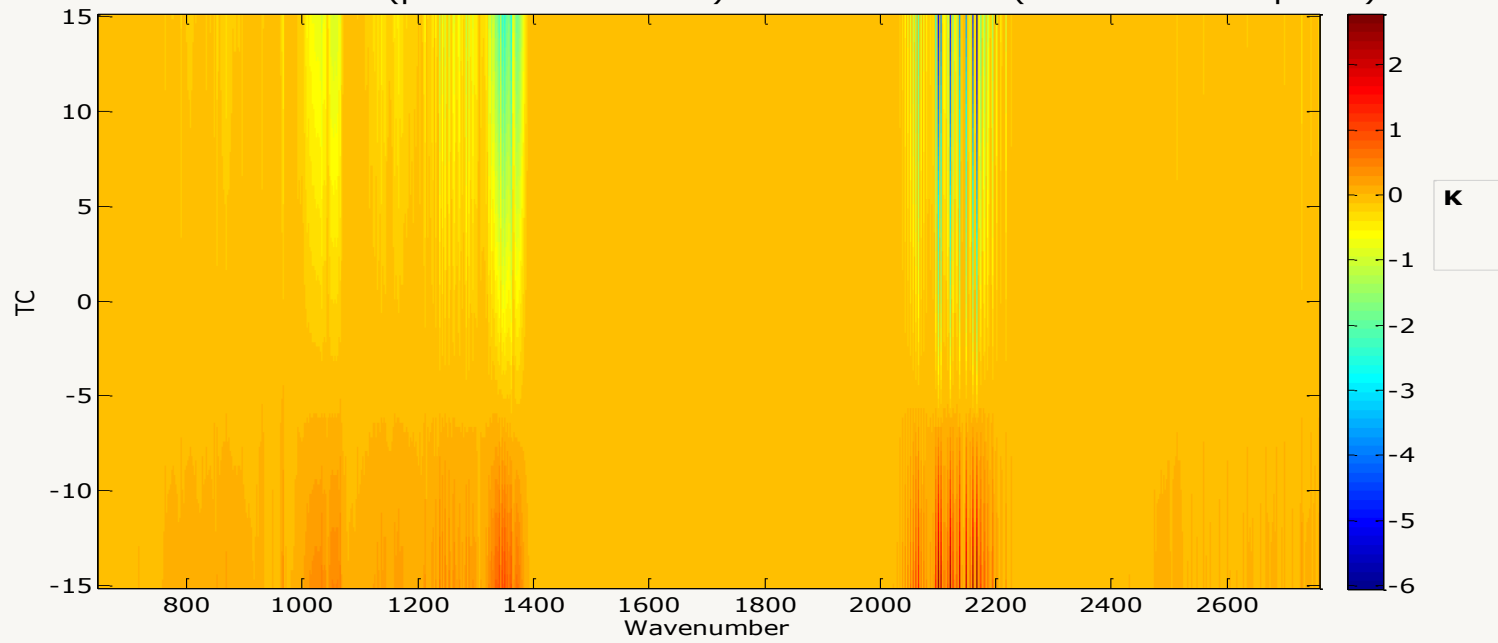
Parameter space : « blindness » vs possible detection ( $|\Delta BT_{TOA}| > 0.2\ K$ )

Large « detection areas » identified

General influence on quality of retrievals of pollution levels in BL (shadowing effect)

Case study (preliminary) : Mexico City, CO retrievals, ground measurements colocated with IASI consecutive events with highly varying thermal contrasts day/night

Delta BT = BT at TOA (pollution thresholds) minus BT at TOA ("normal" atmosphere)



Delta BT IASI Detection Tag

