

Venus Express 太陽掩蔽観測による金星上部もや層の研究

Study of the Venus' upper haze observed with SOIR onboard Venus Express

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Previous Venus' haze observation

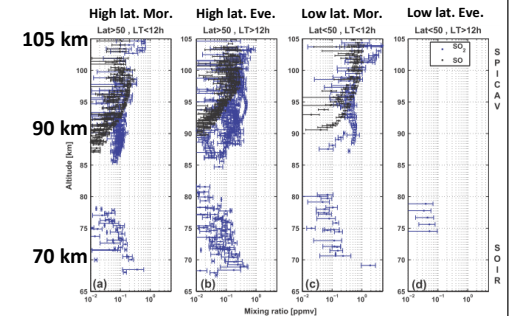
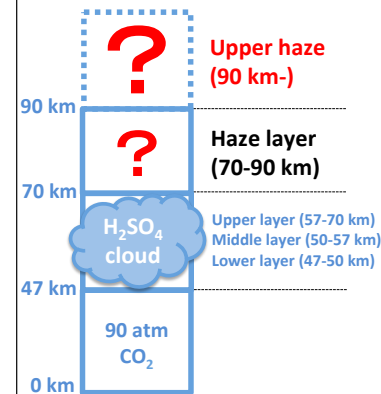


Fig.1 Vertical distribution of SO(black) and SO₂(blue) mixing ratios [Belyaev et al., 2012].

• SO and SO₂ mixing ratios increase with altitude from 85 to 105 km.

The cause of the phenomena is still controversial.

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Previous observation at high altitude

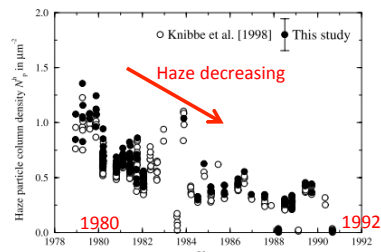


Fig.2 Time variation of haze particle column density [Braak et al., 2002].

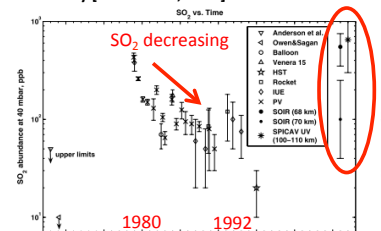


Fig.3 Time variation of SO₂ at above Venus clouds [Belyaev et al., 2008].

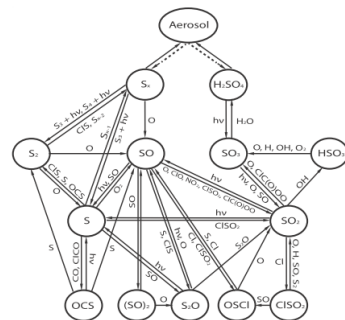
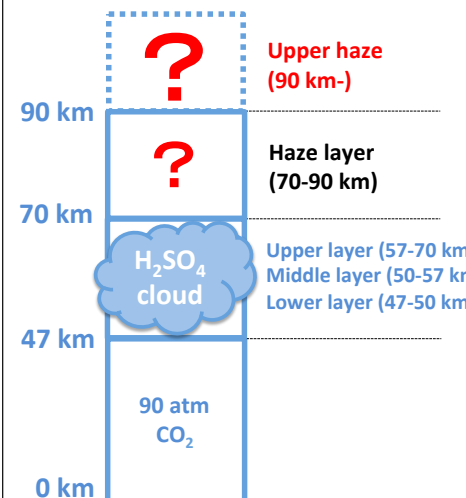


Fig.4 Important chemical pathways for sulfur species [Zhang et al., 2012].

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Purpose of this study



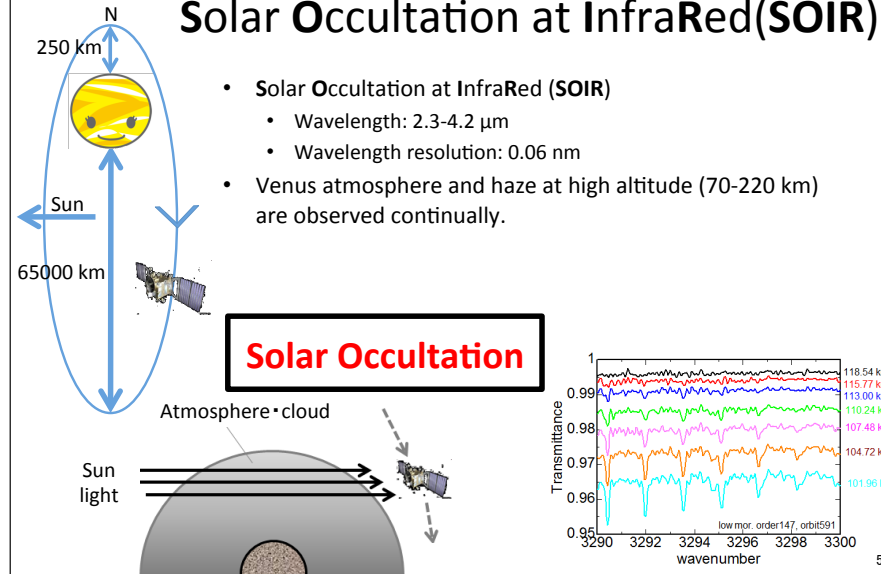
The purposes of this work is

① to examine the upper haze properties at altitude above 90 km.

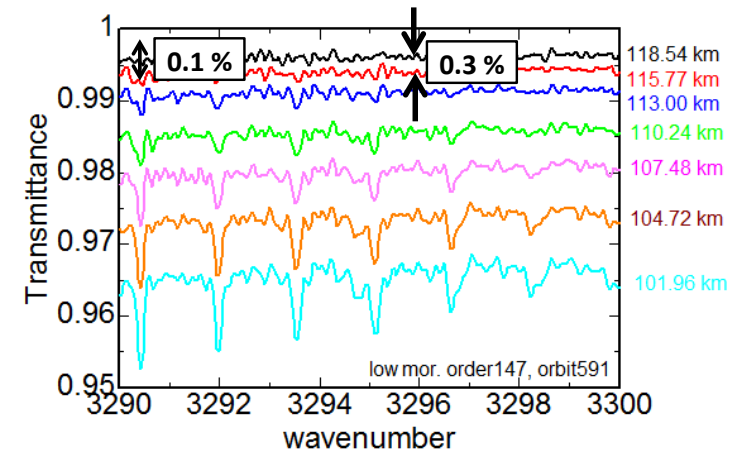
② to discuss what is happening at above 90 km.

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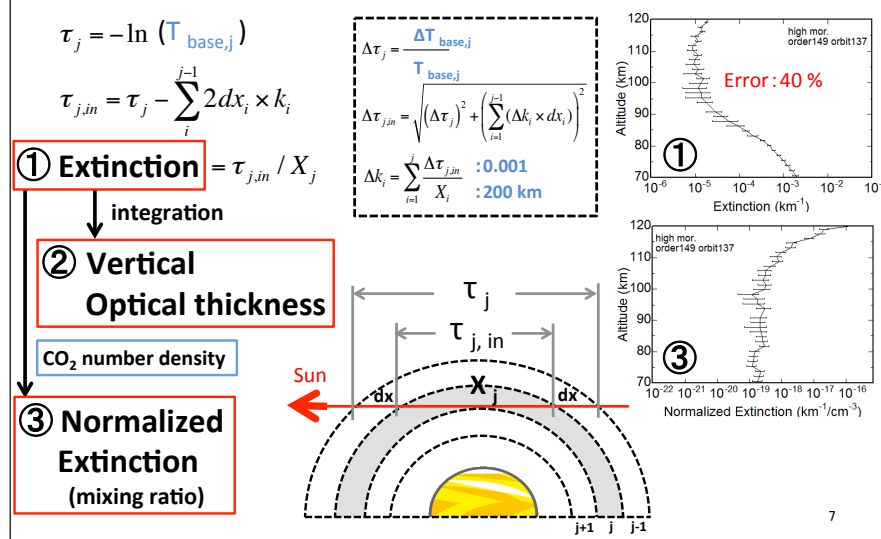
High altitude Observation : Venus Express Solar Occultation at InfraRed(SOIR)



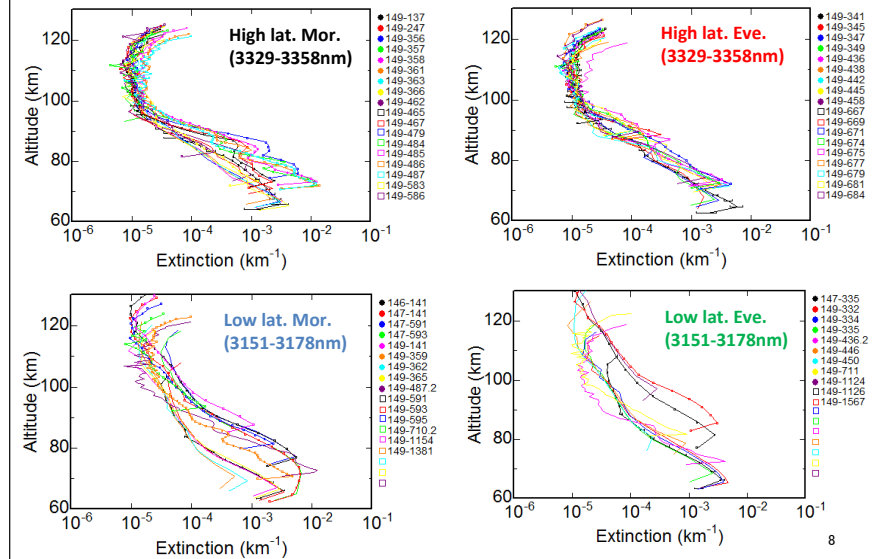
Example of SOIR data : Transmittance



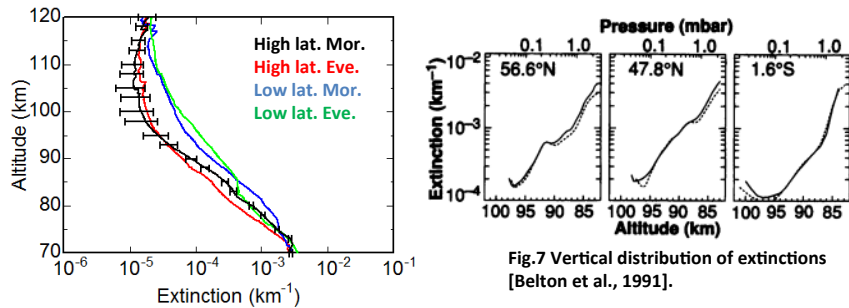
Onion peeling



Result 1: Extinctions



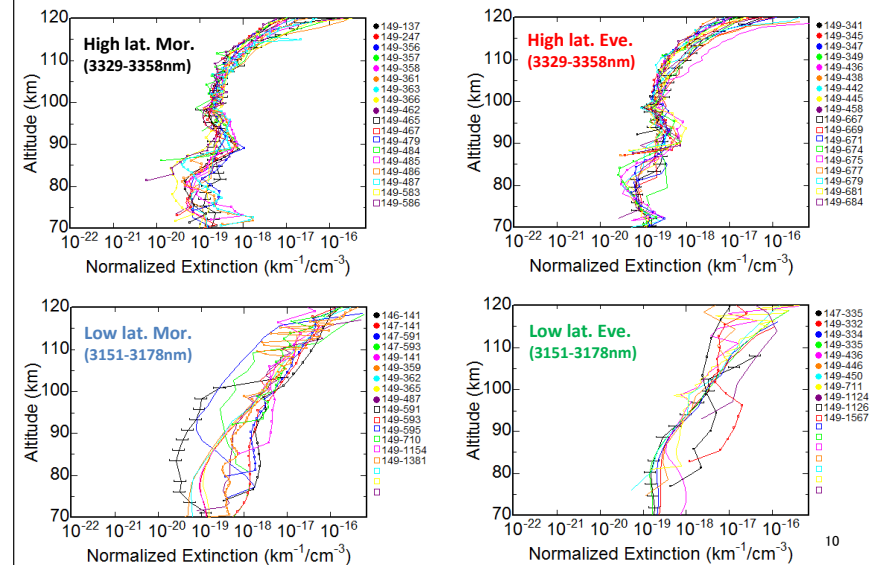
Result 1: Extinction (Ave.)



- Extinction profiles fold at around 95 km.
 - Similar to Belton et al.(1991).
- Their values at low latitudes are larger than those at high latitude.

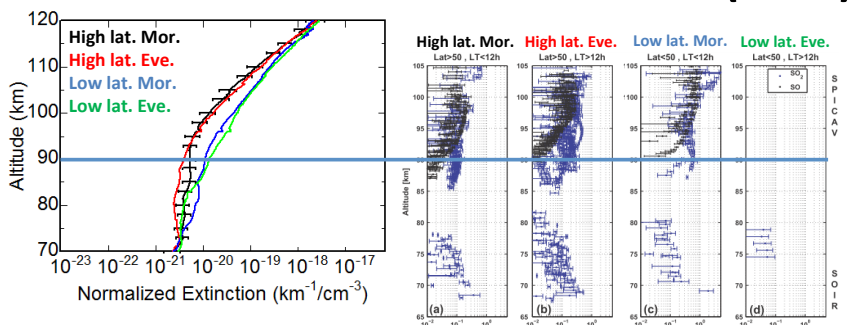
9

Result 4: Normalized Extinctions



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Result 4: Normalized Extinction (Ave.)



Above 90 km

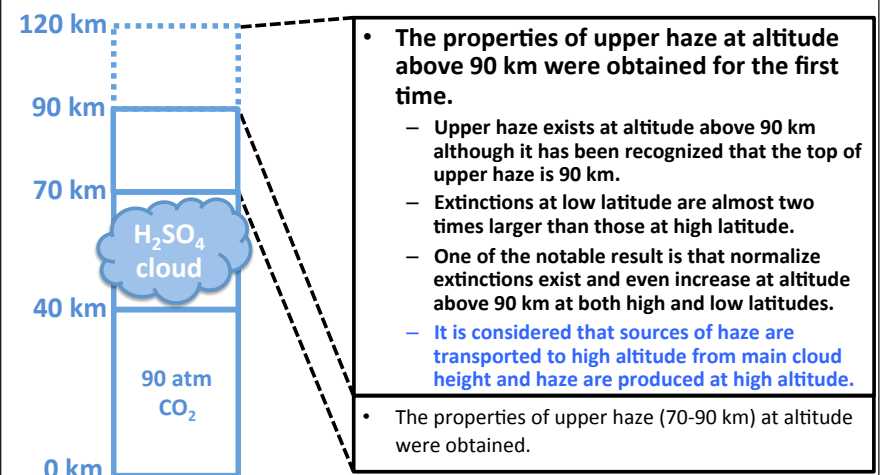
- Significant increases of normalized extinctions are observed at altitude above 90 km at both high low latitude.
 - Haze are produced at high altitude.

Under 90 km

- Normalized extinctions are constant at both high and low latitude.

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Summary



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