

Data Representing Atmospheric Conditions on Mars

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- ① General Conditions
- ② Descent Characteristics
- ③ Sample Analysis at Mars (SAM)
- ④ References

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Features of the Martian Atmosphere

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- Presence of katabatic winds
- Atmospheric electricity

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Description

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- The descent trajectory is between $-3.91^{\circ}N$ to $-4.59^{\circ}N$ and $126.56^{\circ}E$ to $137.32^{\circ}E$.
- The variations of temperature, pressure and density during descent are highlighted in the next few slides.

Temperature

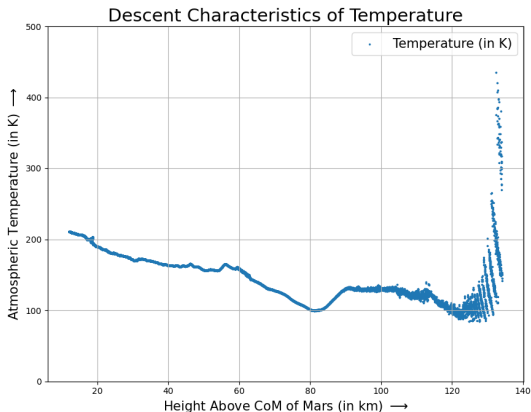


Fig. 1: Temperature During Descent

Pressure

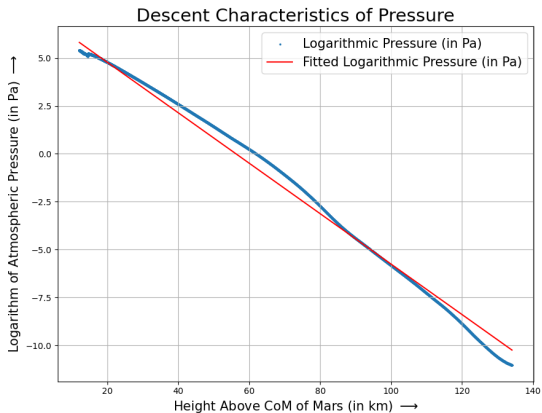


Fig. 2: Pressure During Descent

Density

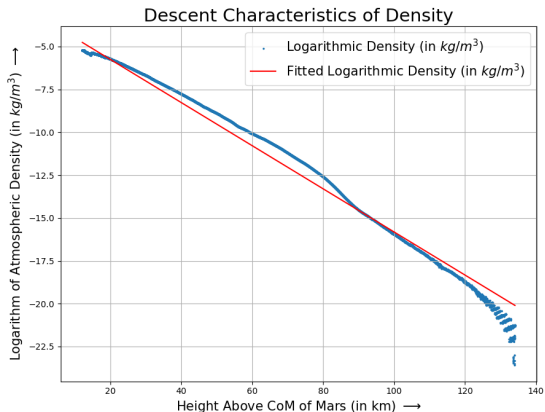


Fig. 3: Density During Descent

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- All the data is collected by NASA's Curiosity rover and stored in the Mars Science Laboratory's Reduced Data Records repository [2].

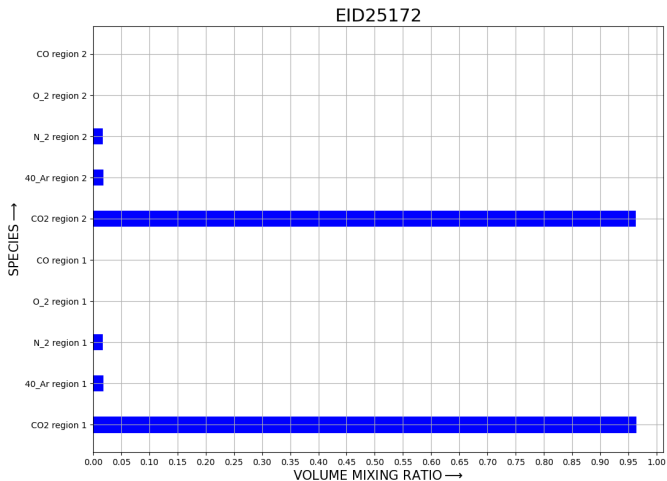
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- The final data presented are the **volume mixing ratios** of various compounds in the Martian atmosphere obtained using the Quadrupole Mass Spectrometer (QMS) present on the rover.

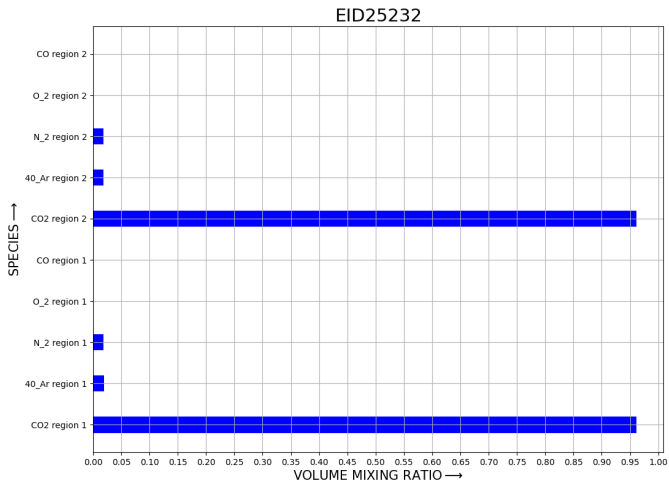
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- The next few slides give few representative plots of the volume mixing ratios of various compounds collected across 29 QMS experiments.

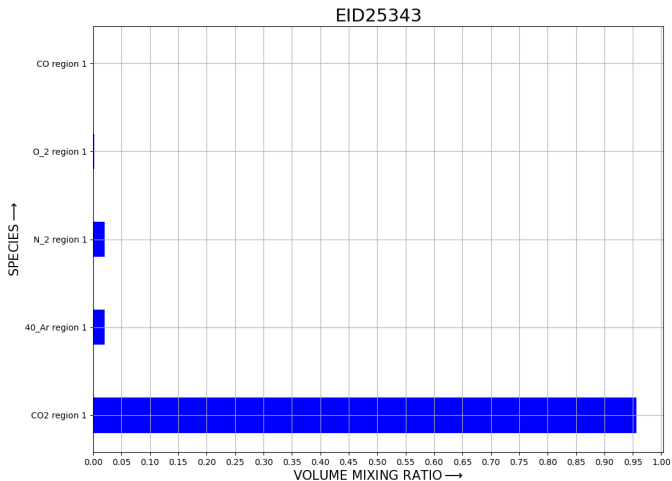
Volume Mixing Ratios



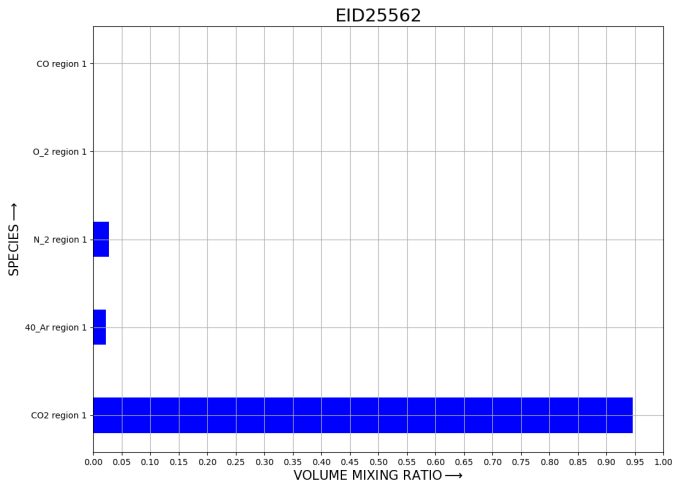
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- [1] C Holstein-Rathlou, A Maue, and P Withers.
Atmospheric studies from the mars science laboratory entry,
descent and landing atmospheric structure reconstruction.
Planetary and Space Science, 120:15–23, 2016.
- [2] SAM Reduced Data Record RDR.
Mars science laboratory (msl) software interface specification.
2013.