

EUROPLANET

European Planetology Network

**Refining Science Case for laboratory
experiment data base for IDIS**

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Some elements

- Links to existing data bases
- Data from laboratory experiments by EuroPlaNet participants
- Contact persons within the EuroPlaNet consortium: **experts of the different fields**

Links to existing data bases

- Ex:**
- spectroscopy data bases
 - photoabsorption, photoionisation cross sections
 - reaction rate constants

Reactions between neutrals
existing data bases

Ion-molecule reactions

data bases difficult to use for planetologists

V. Anicich's compilation only available as a pdf file!

**Data from laboratory experiments
done by EuroPlaNet participants**

- Ex:**
- photoabsorption spectra as a function of temperature
 - visible-IR spectra of planetary solids
 - tholin synthesis and characterization

BUT

**how those data can be collected and up-dated?
by the institutes with links from IDIS to dedicated webpages?**

Contact persons within the EuroPlaNet consortium

- use the expertise for choosing the best data for specific conditions (temperature, pressure, ..)
- critical evaluation of data found in data bases or in the literature
- foster collaborations
- suggest new laboratory experiments

Remark: contact persons for space instrument data would also be helpful for people doing laboratory experiments

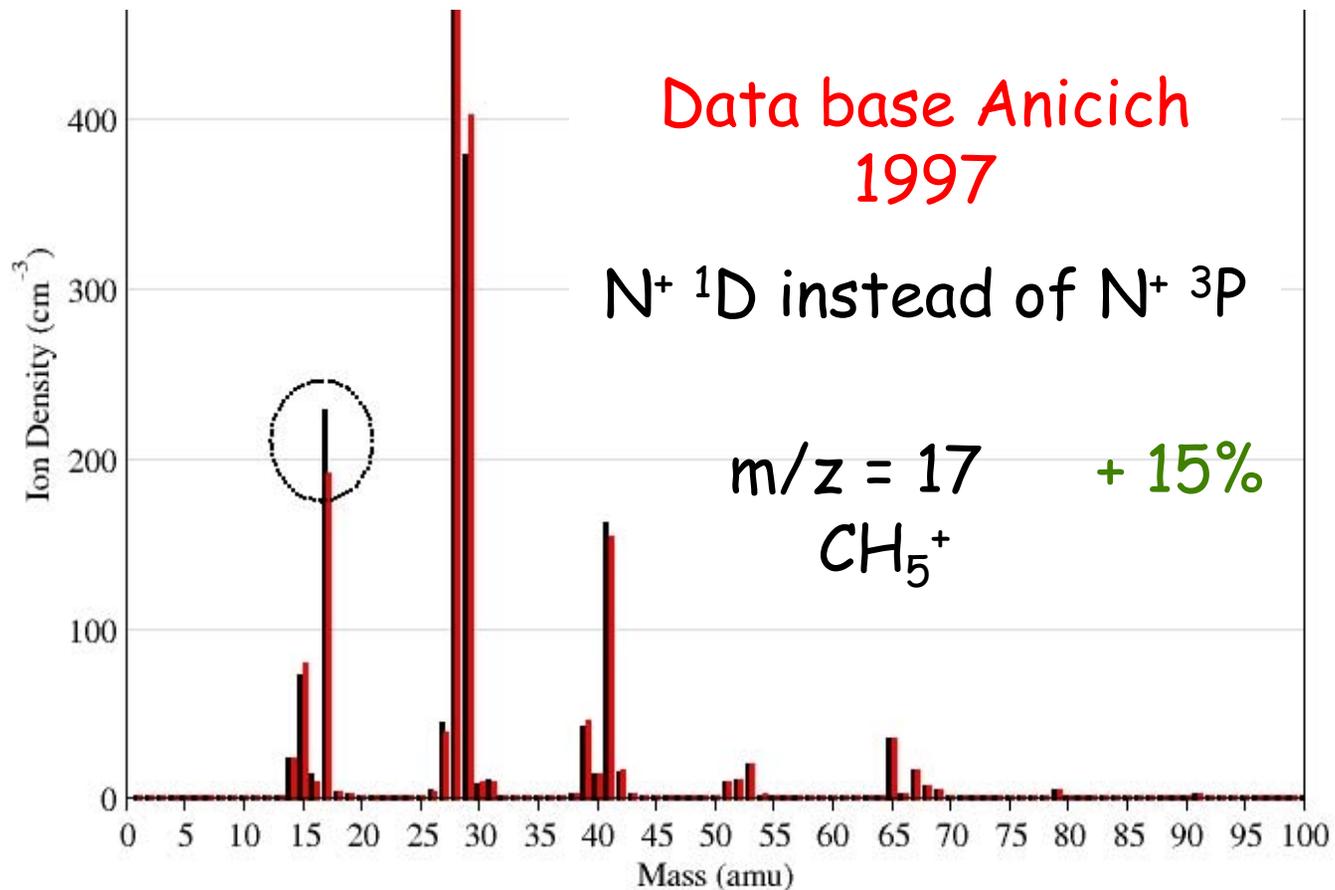
Example

Ion-molecule reactions for Titan's ionospheric chemistry (up to 1000 reactions)

BUT

- no critical evaluation
- most laboratory data obtained at 300K
- uncertainties are almost never given on rate constants and product branching ratios
- lack of laboratory experiments for heavy $C_xH_yN_z^+$ ions observed by INMS (Cassini mass spectrometer)
- almost no laboratory experiments on reactions of doubly-charged molecular ions

Uncertainty on the product branching ratio for the $N^+ + CH_4$ reaction



Ion density profiles with uncertainties

