Small Bodies and Dust (DWG4)

Science Case 1:

How can we best optimise from observations, numerical experiments, laboratory simulations, further analysis of past mission data the science return of Rosetta?

Amara Graps, Harald Krüger; Walter Schmidt

Science Questions In Preparation of Comet Measurements

- **Solar Wind – Comet surface interaction**

  Dust lifting processes (modelling)

- **Surface Material Composition**

  Water storage mechanisms

  Composition

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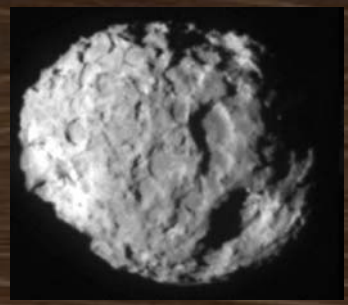
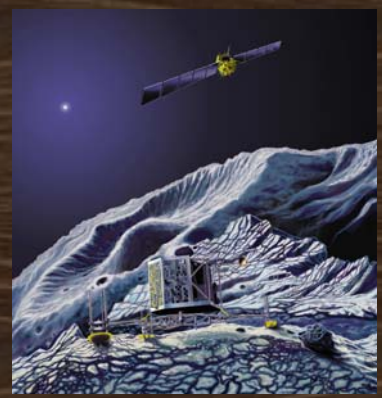
Related Major Scientific Missions

- Giotto, Vega, ...
- Stardust
- Deep Impact
- Rosetta
- *Stardust NExT*





Related Fields

- Cometary science
- Asteroids
- Dust formation
- Dust transport
- Water storage and release mechanisms
- Development of the solar system
- Interaction with solar wind
- *Rosetta Mission Planning*

Needed Data Sets

- Images from all past and future missions
- Mass-spectrometer and plasma data
- In-situ structure and composition data
- Orbit data of satellites and comets/asteroids
- L_α observations from other missions
- HST and ground-based telescope observations
- Radar observations
- Model calculations for dust transport mechanisms
- Laboratory data about mineral / water mixture in vacuum and interaction with solar-wind like plasma

Problem Description

- Data sources have to be localized and combined with Auxiliary data
- Model data have to be found or generated, correlated with observations (calibration,..)
- Information from different disciplines have to be combined

Current Solution:

- Concentration on own data
- Literature study using main journals and books of the special field of interest

What services do users expect from IDIS

- **Reference database for data availability:**

  Observation targets, times and types

- **Reference database information sources:**

  Addresses, Web-pages, Contact information

- **Information about laboratory activities:**

  Capabilities, Interest area, Contact information

- **Information about modelling/simulation activities:**

  Interest area, Data availability, Contact information