

# Problems of space missions

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# Organization



- Latest space missions
  - Rosetta
  - Philae
- The aim of these missions
- The occurred problems
- Reasons for failure

# Rosetta mission

- Spacecraft sent 10 years ago
- Has a lander module called **Philae**
- performing detailed study of comet **67P**
- Catalog the elements that exist in the comet's dust
- Nov. 2014 first successful landing



# Philae lander & aim of mission



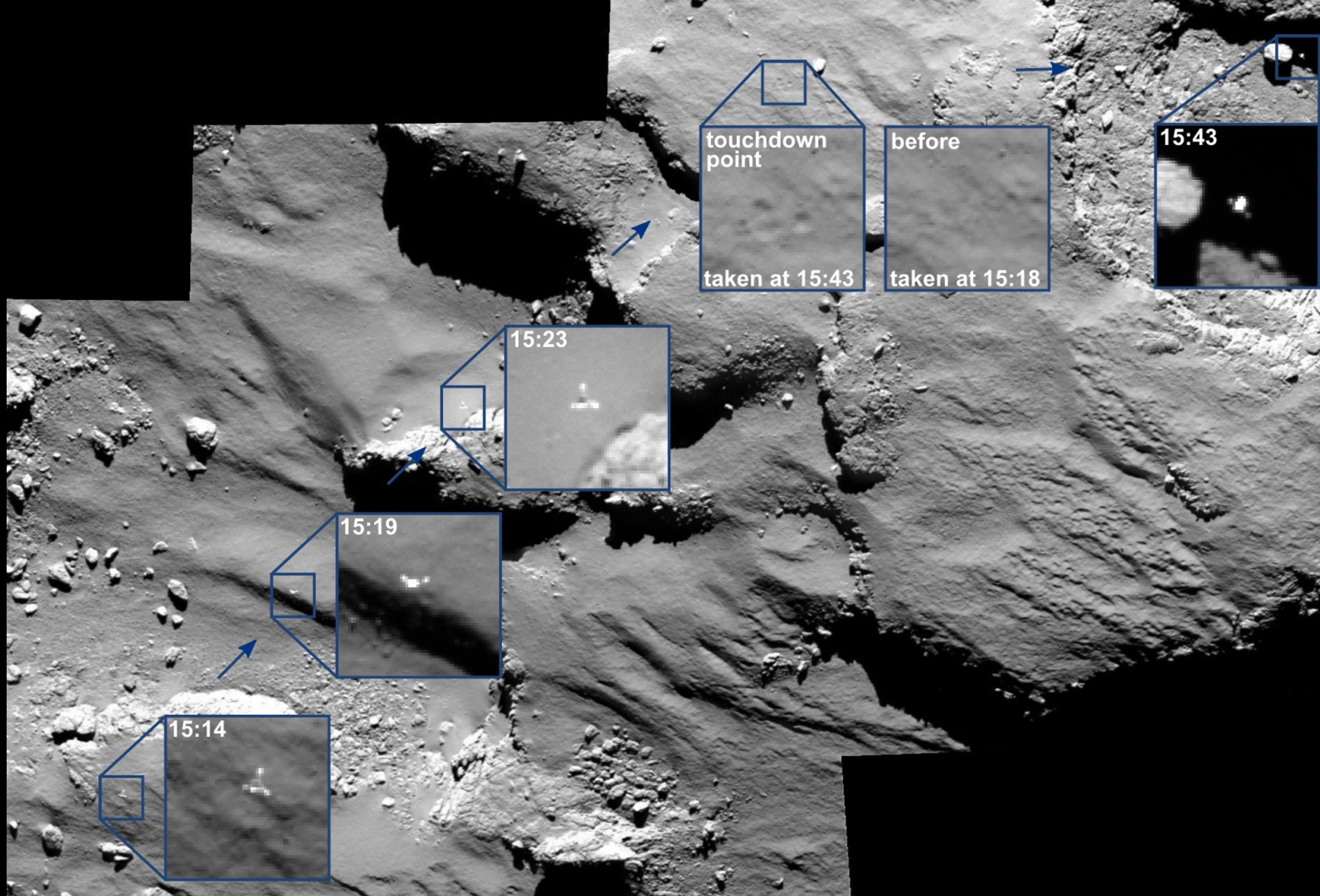
- 7 hours of landing
- Had 2.5 days of battery life to do scientific analysis
- One of its primary goals is to investigate the comet's water content
- Characterisation of the nucleus
- Study of comet activities and developments over time
- Magnetic and plasma environment of the nucleus

→ ROSETTA: JOURNEY TO

# Landing problems



- Rocket motor was not fired to push the lander down
- 2 harpoons & 3 ice screws were not fired
- It bounced twice until it disappeared into the shadow
- Lander got stuck in partial darkness near a cliff on its side, one of its legs pointing into space
- Charging the secondary battery by the sun, if the lander is moved to get its largest solar panel into light
- Using drill could move lander into better or worse position



# Reasons for failure

- Deciding to send the spacecraft closer to take pictures of Philae almost destroyed Rosetta's star tracker
- So many bright dust grains around the comet





# Discovery



- ♦ Comet's nucleus has no magnetic field
- ♦ Can't use magnetic compass on this comet
- ♦ Comet nucleus has very low gravity
- ♦ The isotopic signature of water steam from comet 67P is different from that found on Earth



A space-themed background featuring a view of Earth from space, showing the horizon and a thin blue atmosphere. The Moon is visible in the lower right quadrant, partially obscured by the Earth's horizon. The sky is dark with numerous stars.

**Thanks for your attention!**

**Questions?**