WAC image of Tolstoj basin and surroundings (1.3 km/pixel).
Outline of Orbital Findings

- Mercury’s surface composition: A volatile surprise
- Internal structure: Complexities in the iron planet
- Mercury’s internal magnetic field: An offset dipole
- Volcanic and tectonic history: Unexpected richness
- Hollows and volatile loss
- Polar deposits and shadows
- The hyperdynamic exosphere and magnetosphere
Formation of Mercury yielded not only a high metal/silicate ratio but substantial retention of interior volatiles (e.g., S, K).

Volcanism, including flood volcanism and explosive volcanism, was widespread early in Mercury’s history.

Mercury’s tectonic history has been more complex than previously appreciated.

Mercury’s dynamo today yields an axisymmetric, equatorially asymmetric field.

Mercury’s unusually dynamic exosphere and magnetosphere interact strongly with surface deposits on geologically short timescales.
• The 12-month primary orbital mission spans 2 Mercury solar days, 6 Mercury sidereal days, and 4 Mercury years.

• NASA recently approved a 12-month extended mission.

• MESSENGER will observe Sun-planet interactions during a phase of solar activity not seen by prior or planned spacecraft missions.
Do we need a Mercury Assessment Group, either dedicated or merged with an existing AG?

This question was posed to the MESSENGER Team and their visitors at a recent team meeting. After some discussion, it was concluded that:

• We do not need a Mercury AG at this time
  • The team are currently meeting 3-4 times per year, and are also holding workshops with our BepiColombo colleagues
• We see no immediate benefit from merging with an existing AG, e.g., LEAG, but this position may change in the future
• However, we would like to ensure that Mercury science is adequately represented on the NASA PSS, e.g., by ensuring that at least one member has a strong involvement in Mercury science
• We would like to revisit the issue of whether a Mercury AG would serve the community in the next 2-3 years.