Space Weathering & Exospere-Surface Interactions

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Introduction
- Definitions
- Significance of space weathering
- Old view of weathering

Laboratory Studies
- Analogs
    - Silica gels
    - Laser studies
    - Ion bombardment studies
    - Impact studies
- Samples
    - Track studies of rates and contributions
        - Single impacts
        - Oxidation state of nanophase iron
        - Agglutinates

Remote Sensing
- New observations - Far to near UV
- New observations - Thermal infrared
- Integrating across wavelengths; understanding weathering with depth
- Swirls
- Latitudinal variations
- Depth of mature layer
- Synthesis
- Relative roles and interactions between solar wind, meteoroid bombardment
- Rates of maturation
- Moon in relation to understanding of space weathering on other bodies
- Outstanding questions

Potential Overlaps:

1. **Endogenous and Surface Volatiles**
    - Liu et al. – Impact Melt (Agglutinitic Glass) of Lunar Regolith: A "Volatile Recorder" of the Lunar Surface
    - Hendrix et al. – The Lunar Far-UV Albedo: Indicator of Hydration and Space Weathering

2. **Lunar Magnetism and Surface Processes**
    - Kramer – The Formation of Lunar Swirls
    - Denevi et al. – LROC Wide Angle Camera Ultraviolet–Visible Images of the Moon
    - Cahill et al. – New Global Observations of Lunar Regolith Maturity in the Far Ultraviolet
    - Spyerer et al. – Dynamic Moon: New Impacts and Contemporary Surface Changes

3. **Lunar Exosphere and Space Weathering**
   - Kramer – Space Weathering Dominated by Solar Wind at Earth–Moon Distances
   - Keller and Zhang – Space Weathering Rates in Lunar Soils
   - Greenhagen et al. – Space Weathering in the Thermal Infrared: Lessons from LRO Diviner
   - Cahill et al. – Examining Lunar Regolith Maturation at a Deeper Level
   - Noble (lightning) – Micrometeoroid impacts