

Chapter 5: Impact history of the Moon
Allocated: 26 pages, 20 figures, 5 tables
Supplemental material: animations

1. Introduction (2 pg, 2 figs, 1 table) – **Cohen & Bottke**

What was the state of understanding in 2006?

Expectations for bombardment history based on solar system formation and timing

Impact flux scenarios: terminal cataclysm, declining bombardment, some kind of hybrid, or none of the above

2. Basin-forming epoch (14 pg, 10 figs, 3 tables)

2a. Sample evidence

- Recap of Stoffler and Ryder, discussion of different chronometers and techniques (2 pg, 2 tables) - **Norman**
- Revisions to major basin ages during the “Late Heavy Bombardment” era – Imbrium, Serenitatis & Nectaris (3 pg, 2 fig, 1 table) - **Norman**
- Sample evidence for earlier major impact events – **Nemchin** (2 pg, 1 fig)
- Non-lunar sample ages– brief recap, extensively covered in Annual Reviews – **Cohen** (2 pg, 2 fig)
- What were the impactors? – **Joy** (1 pg, 1 fig)

2b. Other remote sensing data

- Basin populations in the GRAIL data and possible chronologies for their formation (Neumann, Frey) (1 pg, 1 fig)
- Crater counting on basin ejecta (e.g. SPA, Crisium, and Nectaris) (1 pg, 2 fig)

2c. Solar system dynamical models – **Bottke** (2 pg, 2 fig, 1+ animations)

- Brief review here – much more greatly developed in the Annual Reviews chapter

3. Post-basin epoch to present (8 pg, 8 figs)

3a. LRO and other datasets, improvements to crater counting – refer to Hiesinger & van der Bogert (4 pg, 4 fig)

- Basin and younger stratigraphic relations (Fassett)
- Alternative impact chronology (Robbins)
- Copernicus, Autolycus, Cone updates (Hiesinger)

3b. Sample constraints

- Regolith breccias and solar wind implantation, implications for regolith gardening rate - **Joy** (1 pg, 1 fig)
- Lunar impact spherules and related constraints - **Zellner** (1 pg, 1 fig)

3c. Current meteoroid impact rate – **Cohen** (total 2 pg 3 fig)

- Boulder breakdown rate – **Mazrouei** (1 pg, 1 fig)
- LRO change detection, LADEE constraints (0.5 pg, 1 fig)
- MSFC monitoring (0.5 pg, 1 fig)

4. Future work – **Bottke & Cohen** (2 pg, 1 table)

- New science topics, identify unresolved problems
- Science traceability to new missions

Impact Chronology chapter
Sign up sheet
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