SOUTH POLE

Chaining Together Future Potentials
Discovery

Figure 1: Crater chain on Ganymede
Discovery

- Voyager 1 imaging revealed strange line of craters with even spacing on Callisto and Ganymede

Figure 1: Crater chain on Ganymede
Observation

Figure 2: Shoemaker Levy 9 after disintegration

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Observation

- Scientists observed Shoemaker Levy 9 collide into Jupiter’s atmosphere after being broken up into a “string of pearls” due to Jupiter’s tidal forces a year earlier.

Figure 2: Shoemaker Levy 9 after disintegration
Formation

Figure 3: Catena Davy
Formation

- Celestial body crosses Roche limit of planet resulting in disintegration

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Formation

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- Chain of particles collide with larger body resulting in a crater chain or catena

Figure 3: Catena Davy
Qualities of Crater Chains

Figure 4: Catena Mendeleev
Qualities of Crater Chains

- Appear to have a source of impact
  - For secondary crater chains

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Qualities of Crater Chains

- Appear to have a source of impact
  - For secondary crater chains
- Have ripple effect
- Appear to be continuous
  - Occurs at once vs. series of craters

Figure 4: Catena Mendeleev
Selection
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- Used Wide Angle Camera South Pole mosaic
  - 80°S to 90°S
Selection

- Used Wide Angle Camera South Pole mosaic
  - 80°S to 90°S
- Manual search
  - Potential for future computer program to scan image for possibilities
Noted any linear crater formations on a broad scale
- Varying crater sizes
- Varying linearity
- Varying chain lengths

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By following the criteria of crater chains
By following the criteria of crater chains
- By following the criteria of crater chains
- Future potential areas can be found when area is studied in closer
Top Areas
Top Areas

- Optimal spots would include:
  - Near potential landing zone
    - Southeast portion of Shackleton crater
  - Near dark craters
  - Near mountain peaks
    - west and east of Shackleton crater rim
Colonization and Occupation of Moon
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- Chandrayaan–1 mission revealed possibility of water on moon
- High crater walls can provide for radiation shielding
- Linear crater structure allows for ease of construction and transport