Weathering and Sediments

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Weathering: Making Sediment

• Mechanical Weathering
  • Breaking of rocks into smaller pieces
• Chemical Weathering
  • Breaks down rock components and internal structures of minerals
• Produces SEDIMENT and SOIL.

Chemical Weathering

Mechanical Weathering
### Surface Area and Weathering

![Surface Area and Weathering Diagram]

- Fewer cracks, less surface area
- More cracks, most surface area

### Weathering of common silicate minerals: Bowen Revisited!

![Weathering Diagram]

### Erosion & Sediment Transport

![Erosion: The Dust Bowl Image]

### Products of Weathering

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Residual Products</th>
<th>Material in Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>Quartz grains</td>
<td>Silica</td>
</tr>
<tr>
<td>Feldspars</td>
<td>Clay minerals</td>
<td>Silica K⁺, Na⁺, Ca²⁺</td>
</tr>
<tr>
<td>Amphibole</td>
<td>Clay minerals</td>
<td>Silica</td>
</tr>
<tr>
<td>(hornblend)</td>
<td>Limonite</td>
<td>Ca²⁺, Mg²⁺</td>
</tr>
<tr>
<td>Olivine</td>
<td>Limonite</td>
<td>Silica</td>
</tr>
<tr>
<td></td>
<td>Hematite</td>
<td>Mg²⁺</td>
</tr>
</tbody>
</table>

### Soil vs Sediment

![Soil vs Sediment Image]

Figure 6.20