The Alaska Chapter of the Satellite Image Atlas of Glaciers of the World

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The 11-chapter ***Satellite Image Atlas of Glaciers of the World***, (USGS Professional Paper 1386 A-K), summarizes the behavior of Earth's glacier cover on a continental and sub-continental basis. The primary data set used to establish a global baseline for determination of glacier terminus positions and changes is digital imagery collected by Landsat Multispectral Scanner (MSS) sensors on the Landsat 1, 2, and 3 satellites, during the first decade of the Landsat Program between 1972 and 1981. The Alaska chapter, Chapter K, uses a set of 90 Landsat I and II color-composite images compiled by the author from the Landsat data holdings of the EROS Data Center, Sioux Falls, SD. The data set consists of an individual color-composite Landsat image for each glacierized Alaskan path-row point. Chapter K also contains prospective and retrospective information, extending the descriptions of the behavior of individual glaciers from the Little Ice Age to the present. These include 18th- to 21st-century reports of exploration; published and unpublished 19th- to 21st-century field-based scientific investigations; information extracted from numerous journal articles; 19th- to 21st-century ground-based photography obtained from archives, museums and libraries around the world; and 20th- and 21st-century aerial and space photography, digital satellite imagery, and airborne- and space-borne-radar imagery.

The Alaska Chapter describes each of Alaska's 14 regions that currently support glaciers. In most areas analyzed, every glacier that descends below an elevation of ~ 1,500 m is currently retreating, thinning, or stagnating. Most glaciers have an uninterrupted history of continuous post-Little-Ice-Age retreat. In the Coast Mountains, St. Elias Mountains, and the Chugach Mountains more than a dozen large glaciers are currently advancing and thickening. Some have been expanding for more than a 100 years. This presentation summarizes the findings of the Alaska Chapter and documents the complexities and natural variability of the response of Alaskan glaciers to changing regional climate.