

# Temperature Conditions in Iceland 1901–1990

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## ABSTRACT

*Methods used to compute monthly mean temperatures in Iceland since 1901 are shortly described. Revised values are found for 32 selected weather stations starting continuous operation during the period 1901–1939, 7 of which were already active in 1901.*

*Main characteristics of the mean temperature 1901–1990 are briefly discussed. A seasonal division based on these temperature characteristics is proposed. Mean temperature for the 50-year period 1936–1985 is described, primarily regional variations.*

*Finally, considerable temperature variations in Iceland 1901–1990 are discussed.*

## INTRODUCTION

Considerable temperature variations have occurred in Iceland during this century. The first two decades were cold followed by an unusually warm period, 1926–1946. Those and other variations will be described in detail later in this paper.

Several factors, meteorological as well as geographical, influence temperature conditions in Iceland to a great extent. The country is located approximately between 63.4°N and 66.5°N, the northernmost points reaching the Arctic Circle. At these latitudes there is a considerable annual deficit in the total radiation balance. Consequently, a transfer of heat from lower latitudes is carried out by oceanic and atmospheric circulations.

Iceland is situated near the border between warm and cold ocean currents. The warm Irminger Current encircles the south, west and partly the north coast but on the other hand a branch of the cold East

Greenland Current, known as the East Iceland Current, flows in a southerly and southeasterly direction along the east coast. Off the northwest and southeast coast a temperature front is found between these two different currents. It is obvious that the oceanographic conditions must influence weather and climate considerably, both directly at the coasts and also because all air masses arrive in Iceland after having passed over the sea. In addition sea ice sometimes reaches the north and northeast coast, particularly in late winter, with cooling effects.

As with ocean currents warm and cold air masses often meet near Iceland. Cyclones formed on the polar front pass frequently, often with sudden temperature changes, and in some cases cold or warm periods may last for weeks, depending on the main location of the low pressure centres.

Further, it should be mentioned that Iceland is a very mountainous country which in many ways may influence temperature.

For many reasons it is of interest to study temperature conditions and variations in Iceland during this century. For that purpose 32 weather stations, all in continuous operation since 1939 or earlier, were selected (Fig.1). Seven of them were already operating in the year 1901. A summary of methods used to compute monthly mean temperatures at different times is given in the following.

## METHODS FOR COMPUTING MONTHLY MEAN TEMPERATURES

During the first five decades of this century the main hours of observation at Icelandic climatological