P1.15 AN ARCTIC METEOROLOGY AND CLIMATE ATLAS ON CD-ROM

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1. INTRODUCTION

A new data product may aid investigations of arctic climate change and internannual climate variability. The Arctic Meteorology and Climate Atlas is a product of the Environmental Working Group (EWG) Arctic Climatology Project. This digital compilation adds newly available data to the historical record of synoptic observations in the Arctic, and presents fields of meteorological parameters in a common gridded format for ease of use by climate researchers. The Atlas contains mean monthly data from Russian coastal and island stations for the period of record until 1990. For completeness, western coastal station data are given as well. A reissued version of synoptic data from all Russian "North Pole" drifting stations, previously unavailable Russian synoptic data from ice patrol ships and from Drifting Automatic Radiometeorological Stations, and collected historical western data including observations from the *Fram* and *Maud* expeditions and from U.S. drifting stations are contained on the CD-ROM in a common format and can be browsed with a plotting tool. Gridded fields were constructed using existing and new data sources. For most parameters, fields are available beginning in the 1950s. Images of the gridded data can be browsed using the HTML interface.

In addition to data, the Atlas contains English translations of monographs by Russian investigators on clouds and solar radiation, a glossary of meteorological terms in English and Russian, a "Primer" section with educational material for the general public, an article on Inuit climate knowledge, and a monograph on weather hazards in the Russian Arctic translated from Russian. A section titled "A Look Back" highlights the history of meteorological observations in the Arctic, with a photo gallery and new documentation of the Russian "North Pole" drifting station program.

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2. DESCRIPTION OF THE ATLAS DATA CONTENTS

2.1 Gridded Fields

Gridded fields for six parameters are included:

Two-meter air temperature (Monthly means, standard deviation, and coefficient of variation for the 1980s and 1990s)

Sea level pressure (Decadal monthly means for the 1950s through 1990s; long-term monthly means for 1951 through 1990; long-term monthly means for 1961 through 1990; and fields of anomaly, standard deviation, and coefficient of variation)

Precipitation (Monthly mean fields for the period 1951 to 1990)

Cloud (Decadal monthly mean fields of total and low cloud cover for 1952 through 1995; long-term monthly mean fields of total and low cloud cover for 1952 through 1995)

Snow (Monthly mean snow depth fields on land for 1966 through 1982; monthly mean snow depth fields for the Arctic ocean for 1954 through 1991; monthly mean snow water equivalent fields for the Arctic ocean for 1954 through 1991)

Global solar radiation (Climatological monthly means. In addition, the "Gridded Fields" section of the Atlas contains a climatology of direct, global and net radiation from Russian and other sources, compiled and scanned at AARI by M. S. Marshunova).

2.2 Coastal Station Data

Monthly means of meteorological observation data from 65 Russian and 24 western coastal

and island stations for a period that includes the early 1950's through 1990 are provided. The Russian station observations are of two-meter air temperature, sea level pressure, total and low cloud amount, and relative humidity. The western station observations are of sea level pressure, air temperature, and precipitation. After 1960, a moisture parameter (relative humidity or dew point temperature) is generally available.

2.3 Floating Platforms

The data in this section of the Atlas, taken together, provide observations with better spatial and temporal coverage of the Arctic ocean than has been available in the past. These data are three or six hourly synoptic data, monthly means, or in the case of DARMS, once daily observations.

Data are from:

Russian "North Pole" drifting stations (Two-meter air temperature, sea level pressure, total and low cloud, surface temperature, and wind velocity, for years spanning 1938 to 1991)

Western drifting stations (Data from the *Fram*, the *Maud*, and stations T-3, Alpha, Charlie, AIDJEX, and ARLIS. The earliest data are from the *Fram* in 1893, and the latest are from the AIDJEX experiment in 1975 and 1976. Parameters vary but all stations include air temperature, pressure, wind, and humidity data)

Russian Drifting Automatic Radiometeorological Stations (DARMS) (Wind, pressure and temperature from 1958 through 1975)

Russian Ice Patrol ships (Wind, pressure, air temperature, sea surface temperature, total cloud amount, low cloud amount, and relative humidity for voyages from 1952 through 1982)

3. OBTAINING THE ATLAS

Visit http://nsidc.org/NSIDC/CATALOG/ENTRIES/G01938.html to order the Atlas. There is no charge for the Atlas. The Arctic Meteorology and Climate Atlas was developed by a joint U.S. - Russian team at the Arctic and Antarctic Research Institute, St. Petersburg, the National Snow and Ice Data Center (NSIDC), Boulder, and the University of Washington, Seattle under funding from the National Oceanic and Atmospheric Administration and the EWG. The EWG Arctic Climatology Project has also produced arctic ocean and sea ice atlases. All atlases are distributed by NSIDC.