CCI+ PHASE 1 – NEW ECVS
PERMAFROST

D4.2
CLIMATE RESEARCH DATA PACKAGE VERSION 2
(CRDPv2)

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PREPARED BY

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1   INTRODUCTION

1.1   Purpose of the document

This document is a cover for the Climate Research Data Package (CRDP) for the Permafrost project produced in Phase 1 of ESA's Climate Change Initiative (CCI+, 2018-2021).

1.2   Document Status of the document

This is the first issue of the CRDP document in Phase 1 of the project, reflecting Version 2 of the Climate Research Data Package (CRDPv2; dataset version 3).

1.3   Preface

Permafrost is an Essential Climate Variable (ECV) within the Global Climate Observing System (GCOS), which is characterized by subsurface temperatures and the depth of the seasonal thaw layer. Complementing ground-based monitoring networks, the Permafrost CCI project is establishing Earth Observation (EO) based products for the permafrost ECV spanning the last two decades. Since ground temperature and thaw depth cannot be directly observed from space-borne sensors, a variety of satellite and reanalysis data are combined in a ground thermal model. The algorithm uses remotely sensed data sets of Land Surface Temperature (MODIS LST/ ESA LST CCI) and landcover (ESA Landcover CCI) to drive the transient permafrost model CryoGrid 2, which yields thaw depth and ground temperature at various depths, while ground temperature forms the basis for permafrost fraction.

1.4   Temporal coverage

CRDPv2 covers the years from 1997 to 2019, with the data available for each year of the period.

1.5   Spatial Coverage

CRDPv2 pertains Arctic and High-Mountain permafrost environments, extending down to 35 °N latitude in the North America and down to 25 °N in Asia.

The projection is Arctic Polar Stereographic, with 0.927 km grid spacing.

1.6 Data availability and release

CRDPv2 will be made available through the CCI Data Portal (http://cci.esa.int/data). At time of writing this document, the Permafrost Team liaises with the CCI Data Portal Team for obtaining the DOI, setup the associated landing pages, and transfer data files to the Data Portal. This is progressing smoothly.

1.7 Acronyms

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AWI	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research
B.GEOS	b.geos GmbH
CCI	Climate Change Initiative
CRDP	Climate Research Data Package
ECV	Essential Climate Variable
EO	Earth Observation
ESA	European Space Agency
GAMMA	Gamma Remote Sensing
GUIO	Department of Geosciences University of Oslo
SU	Department of Physical Geography Stockholm University
UNIFR	Department of Geosciences University of Fribourg

2 EXAMPLES
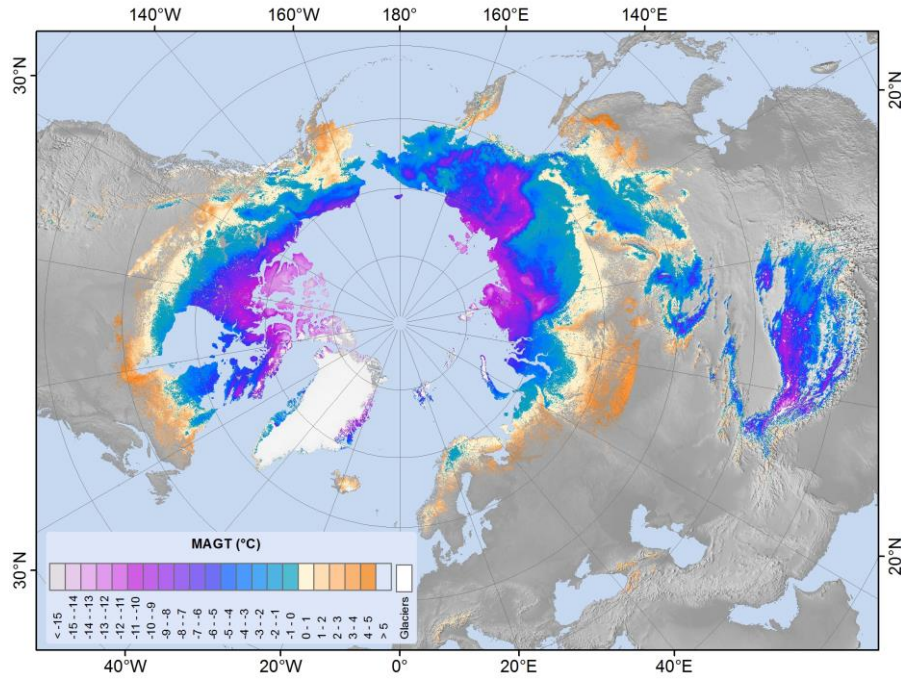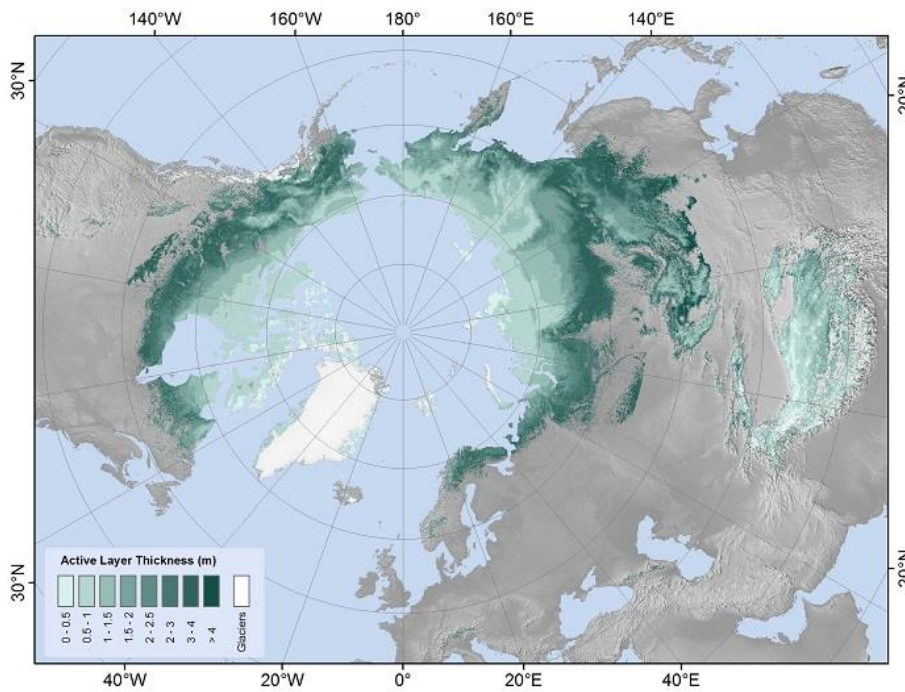

Figure 1: Example of Mean Annual Ground Temperature at 1 m depth in 2005

Figure 2: Example of Active Layer Thickness for 2015