

*Novel Assessment of Black Carbon in the Eurasian Arctic (NABCEA), Research plan 2015-09-30*

**1. Consortium proposal, duration 48 months (1.9.2016 – 31.08.2020)**

**Novel Assessment of Black Carbon in the Eurasian Arctic:  
From Historical Concentrations and Sources to Future Climate Impacts (NABCEA)**

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**Sites of research:**

- 1) Finnish Meteorological Institute (FMI),
- 2) University of Helsinki (UH),
- 3) University of Eastern Finland (UEF),
- 4) Finnish Environmental Institute (SYKE)

### **3. OBJECTIVES, HYPOTHESES AND JUSTIFICATION**

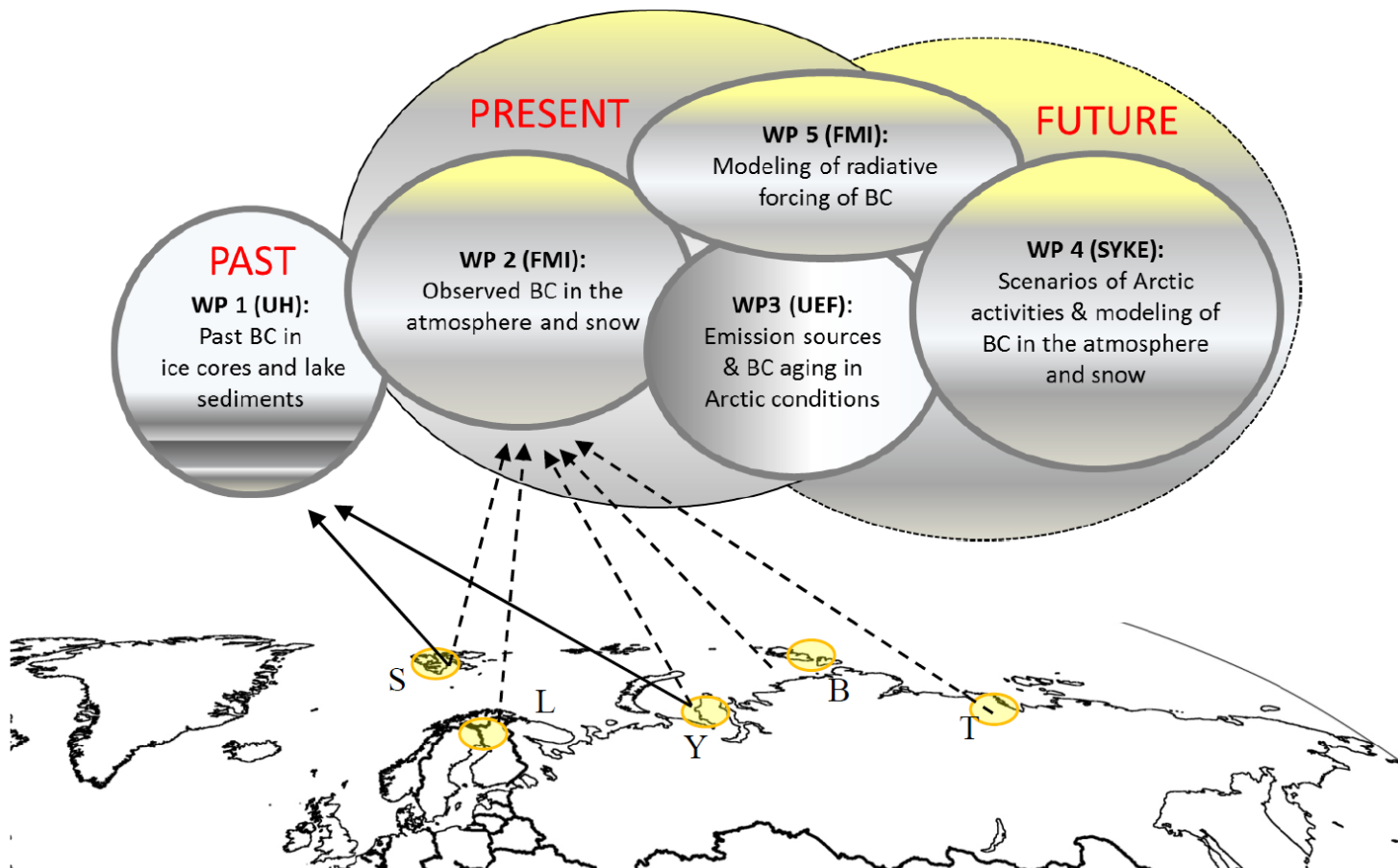
#### **3.1 Research objectives**

The general objective of the proposed research is to quantify the contribution of the various sources of BC to the Arctic climate. The objective is to point out the most important BC sources affecting the warming and melting in the Arctic in the recent past, present and the future.

The detailed goals of the project are

- 1) to quantify the contribution of the most important sources, especially flaring related to oil drilling, shipping, and wood combustion to the BC observed in the Arctic atmosphere, snow and ice in the present time and in the recent past
- 2) to quantify the climate forcing of BC in the atmosphere and snow
- 3) to further define the effect of aging on the physical properties and chemical composition of BC and its role in radiative forcing in the Arctic environmental conditions
- 4) to estimate how the above-mentioned effects affect Arctic climate during the next 50 years

#### 4. Key research methods within the research project



Field measurement sites: S: Svalbard; L: Lapland; Y: Yamal peninsula; B: Bolshevik island; T: Tiksi

The project will consist of field and laboratory experiments, analyses of existing field samples, and modeling. The field data are collected at the sites shown in the map above. The work packages (WP), the contributing institutes, the responsible leaders, and the methods used are presented below.