

# THE FEASIBILITY STUDY FOR A GRAVEL RUNWAY NEAR MARIO ZUCHELLI STATION (ITA)

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## 1. Overview

For intercontinental transportation of personnel and freight at the beginning of the summer campaigns the Italian National Antarctic Program charters a Hercules aircraft and operates a fast ice runway, which is realized at the beginning of the summer campaign in the Gerlache Inlet bay.

This ice runway is of crucial importance for the realization of the Italian scientific activities allowing an earlier opening of Mario Zucchelli Station (MZS) that would be impossible chartering only a ship.

In the last years however, a significant environmental variability was observed and resulted in an earlier closing of the fast ice runway, and related logistic difficulties affecting the scientific activity.

Without the US NSF support, our scientific activities would be seriously affected as the Italian National Antarctic Program is strongly dependent upon the establishment of cooperation agreements especially when the multipurpose ice class ship is not chartered.

To face future deals and increase the reliability of the system in a environmentally changing scenario, the Italian National Antarctic program needs a long term solution that could ensure realization of scientific programs guaranteeing delivery of material and personnel and lower the impact of Italian operations on other National Antarctic Programs.

## 2. The study

Two alternative locations were selected as estimated suitable for this type of infrastructure considering the land orography and the vicinity to MZS (*fig. 1*).

A study aiming to assess the technical, economical and environmental feasibility of the gravel runway is in progress: it started in the 2012-2013 Antarctic summer Campaign and additional information will be collected in the next 2013-2014 Campaign.

Meteorology of the area is a significant aspect of the feasibility study.

Among all installed Italian weather stations, two are very close to the selected sites and therefore useful for historical data analysis.

To be able to consider possible wind shear effects and to assess on site turbulence critical for safety of air operations and useful to assess contaminant dispersion, in the 2012-2013 summer campaign five additional automatic weather stations were installed between both sites.

These stations will allow for a comprehensive modeling of the conditions in the area.

## 3. Acknowledgments

The feasibility study is carried out by the contribution of the whole personnel of the ENEA Antarctic Technical Unit and of the Italian Meteorological Antarctic Observatory, each for respective area of expertise.

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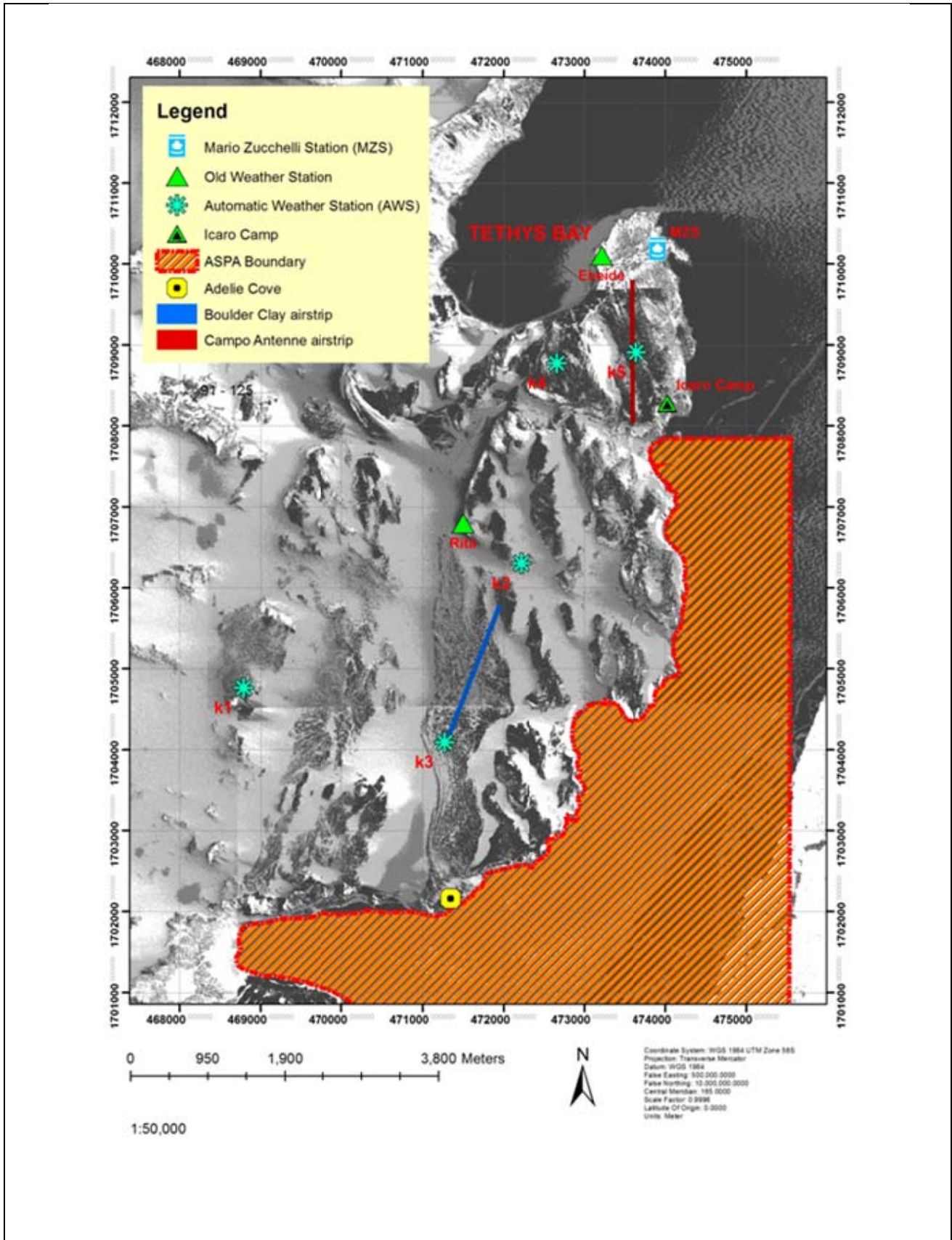


Figure 1