

An integrated GIS for Fiordland's marine habitats

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ABSTRACT

As part of a multi-year research project looking into the regional biodiversity and management of Fiordland's marine habitats, a GIS has been developed to manage and enhance the combined weight of many years of biological and physical data collection. To provide additional situational depth to these data, several high resolution physical models and interpolations of *in situ* measurements have been incorporated into the GIS. These include, among others, a near shore wave model, providing hindcasted wave exposure statistics for the fjord entrances; a model of solar irradiation, lending insight into the spatial variations of primary productivity in Fiordland's highly unusual shaded surface waters; and interpolations of *in situ* physical datasets for resolving hydrological patterns throughout the fjords. The *in situ* data are processed using a novel spatial interpolation technique to successfully account for the boundary effects of the many islands and parallel channels found throughout the fjords. The GIS has been developed for use by the NZ Ministry for the Environment and Department of Conservation in support of enacting the management strategy put forward by the Guardians of Fiordland Fisheries and implemented in the *Fiordland Marine Management Act of 2005*. It is intended to provide resource managers with the best possible information regarding the nature and extent of the region's habitat zones. In addition it is being used by Otago researchers to provide physical context at past and future research sites and help map potential bioinvasion vectors.

Keywords and phrases: biodiversity, ecological management, fjord, GIS, geophysical modelling, habitat mapping, interpolation techniques, marine reserve

References

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