從大氣環流模式資料到氣候變遷風險評估及應用 -使用者導向的氣候變遷整合服務平台

From General Circulation Model (GCM) data to climate change risk assessment and application – A user-oriented climate information and service platform

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摘　　要

臺灣氣候變遷推估資訊與調適知識平台(Taiwan Climate Change Projection Information and Adaptation Knowledge Platform, 簡稱TCCIP)在科技部支持下，為提供更符合國內氣候變遷調適推動所需的氣候變遷相關科學資料、資訊、知識與工具，在2019年10月推出氣候變遷整合服務平台3.0，導入設計思考的概念，以使用者需求為導向，設計出更直覺化且親民的使用者服務介面與內容，讓資料的取得、資訊的傳遞、知識的推廣及工具的應用都更能輕易上手。

使用者導向最主要面臨的課題即為如何從大氣環流模式資料轉換成氣候變遷風險評估及應用的資料、資訊、知識與工具。本研究透過共同設計(Co-Design)的方法，我們得出了幾個要點，一是以應用為導向的資料與資訊圖表；二是以資料管理計畫(Data Management Plan，簡稱DMP)穩固服務品質與水準；三是以多元使用者導向之知識轉譯。為了提供不同層級與議題之氣候變遷風險評估及應用，TCCIP提供了數10組資料服務，擬定資料服務政策，將資料依照不確定性與應用程度分為四級，包含開放資料、限制開放資料、進階資料以及測試資料，時間尺度從時資料到月資料，空間尺度從1公里到5公里，涵蓋降雨、溫度、相對濕度、平均風速等常用變數，種類包含網格化觀測、模式模擬資料以及指標資料。在提供資料服務的同時，依照DMP管理規範，制定每筆資料的生產履歷來說明資料的產製過程，以及說明文件來說明資料格式。為確保資料品質，資料服務會經過層層檢核，如有資料更新或改版也會透過公告及會員信件的方式通知使用者。未來推估的模擬資料除了分析大尺度環流場的變化趨勢，也建立包含淹水、農業、坡地、漁業、水資源、海岸及公衛等七項領域的風險評估資訊於調適百寶箱。透過知識轉譯，將調適知識深入淺出提供國內各部會與地方在調適行動計畫的參考。

關鍵字：氣候變遷，氣候服務，調適百寶箱

Abstract

Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), with the support of the Ministry of Science and Technology, provides scientific data, information, knowledge and tools. The climate change integration service platform 3.0 was launched in October 2019, introducing the concept of design thinking, and designing a more intuitive and friendly user service interface and content based on user oriented to make data acquirement, transmission of information, the promotion of knowledge and the application of tools easier to use.

The most important subject of user oriented is how to convert things from the study of general circulation model data into data, information, knowledge and tools for climate change risk assessment

and application. In this study, through the method of co-design (Co-Design), we drew several key points. One is application-oriented data and information graphs; the other is data management plan (DMP) stable service quality; third is the translation of knowledge oriented by multiple users. In order to provide climate change risk assessment and application at different levels and topics, TCCIP provides several sets of data services, formulates data service policies, and divides data into four levels according to the degree of uncertainty and application, including open data, restricted open data, advanced data and testing data. The time scale ranges from hour to month, and the spatial scale ranges from 1 km to 5 km. It covers common variables such as rainfall, temperature, relative humidity, and average wind speed. The types include gridded observation data, model simulation data, and indicator information. While providing data services, in accordance with the DMP management specifications, the data production history of each data is formulated to explain the production process of the data, and the data documentation is formulated to explain the data format. In order to ensure the quality of the data, the data service will be checked at various levels. If there is any data update or revision, users will be notified through announcements and member letters. In addition to analyzing the changing trends of large-scale circulation fields, the estimated simulation data in the future also establishes risk assessment information in seven fields including flooding, agriculture, slopes disaster, fisheries, water resources, coasts, and public health. Through knowledge translation, the adaptation knowledge will be explained in a simple way and provide reference for the adaptation action plans of various ministries and localities in the country.

Key words : climate change, climate service, adaptation resources kits