

Highlights of the AMFIC project

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The AMFIC project monitors and forecast tropospheric pollutants over China. Satellite data, in situ measurements and model results are used to generate consistent air quality information over China. Some satellite products are provided operationally on the web on a daily basis: NO₂, SO₂, clouds, total ozone, others are processed to provide a data record for several years: Aerosol (optical depth), CO, CH₄, and formaldehyde. Several satellite retrieval algorithms have been improved and validated with ground observations located in Beijing. The satellite data of NO₂ and HCHO have been analysed for trends and local variability. A forecast service is running since the summer of 2008 and publicly accessible via internet (www.amfic.eu). The forecast service is performed by the regional chemical transport model CHIMERE, showing a 2-day forecast of major air pollutants for the important urban areas. A regional model AURORA for the Shenyang area was nested in CHIMERE to calculate different vegetation and emission scenarios. Recently, a new technique has been developed to estimate NO_x emissions in China with satellite observations of tropospheric NO₂. The calculation is fast compared to other techniques, enabling daily emission estimates on a 20 km resolution from satellite observations. Highlights of the AMFIC project will be presented.

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中国空气质量监测和预报（AMFIC）项目的亮点

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中国空气质量监测和预报AMFIC项目利用卫星资料、现场测量数据和模式结果生成协调一致的空气质量信息，对中国区域对流层污染物进行监测和预报。AMFIC项目对一些卫星遥感产品，如NO₂、SO₂、云、臭氧总量等通过网页每日业务发布；对其他一些卫星遥感产品，如气溶胶光学厚度AOD、CO、CH₄、甲醛等，经处理生成长达几年的资料集。通过北京地区现场观测资料的验证，一些卫星反演算法得到了改进和提高。卫星遥感产品，如NO₂和HCHO已被用于分析当地的时空分布特征和变化趋势。自从2008年以来，AMFIC项目一直通过互联网（www.amfic.eu）提供公众可以获得的预报服务。预报服务主要依赖一个区域的化学传输模式CHIMERE的结果，可以提供2天的城区重点关注区域的主要大气污染物预报。利用精细化区域模式AURORA嵌套进入CHIMERE模式，可以模拟计算沈阳不同植被和排放源情境下的空气质量。最近，AMFIC发展了一套新的技术，利用卫星遥感的对流层NO₂估计中国区域NO_x的排放源。同传统技术相比，新的技术可以快速地估算出20公里空间分辨率的排放源日变化情况。本报告将重点总结AMFIC项目的主要亮点。（龙计划项目ID 5253）