

Examples of Recent Development and Application of Environmental Modeling and Assessment

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There have been many new developments in environmental models and their field applications in the new century. New modeling tools have significantly supported the assessment and control of a variety of site contaminations worldwide. This talk presents a few such examples in relation to air, water, and soil medium. First it will brief a surface water example in which a new coupled near- and far- field three-dimensional numerical dispersion model is developed, validated, and applied to the offshore area in the Eastern Canada. Second, a satellite-aided large scale air quality model is introduced where mixed emission sources are considered and the developed modeling tool is systematically supported and validated by satellite monitoring data with field applications in the North America and Asia. Third, new efforts are observed to extend the well-applied Multimedia Fate and Transport Modeling methods, such attempts include the numerical consideration of spatial and temporal resolution as well as field applications at both small and large scales. Recent environmental models have also been linked to new risk assessment and uncertainty analysis methods to deliver robust sustainability-related decision-making support.