

Formation en modélisation hydrogéologique

Modélisation du transport de contaminants en solution

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Une méthodologie complète pour la modélisation du transport de contaminants au sein des aquifères est décrite étape par étape. Des définitions, une terminologie et une méthodologie générale sont proposées. L'accent est mis sur l'explication des processus, leur mise en équations et ensuite l'assemblage de l'équation de transport basée sur le bilan en masse ou en volume (si la densité de l'eau souterraine est considérée comme constante) de contaminant au sein du milieu poreux saturé. La description des différentes conditions aux limites est basée sur une comparaison avec celles appliquées pour les écoulements souterrains (cfr cours de l'année passée). Les différentes méthodes de résolution de l'équation du transport de soluté sont introduites en commençant par la définition des 2 nombres adimensionnels numériques (Péclet et Courant) nécessaires pour caractériser le type de transport. Les méthodes eulériennes avec décentrage amont, la méthode TVD, et ensuite les méthodes eulériennes-lagrangiennes sont expliquées.

La longue liste de référence est fournie afin de permettre aux professionnels d'approfondir le sujet. De nombreuses références de l'auteur et de son équipe de recherche sont fournies pour permettre de trouver des exemples pratiques dans divers cas pratiques.

Keywords

Advection, diffusion, dispersion, adsorption, désorption, dégradation, effet d'eau immobile, équation de transport de solutés, nombres de Péclet, nombre de Courant, conditions aux frontières, méthodes eulériennes, décentrage amont, méthode TVD, méthodes eulériennes-lagrangiennes, méthode des caractéristiques, méthode modifiée des caractéristiques, méthode hybride des caractéristiques.

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