

Cours du soir CBH du 08/10/2020

Rappels théoriques sur l'écoulement des eaux souterraines et sa modélisation (conceptualisation, construction, calibration)

Alain Dassargues

¹Hydrogeology and Environmental Geology, Urban and Environmental Engineering, Liège University, Belgium

E-mail: Alain.Dassargues@uliege.be

Abstract/Table des matières

Une méthodologie complète pour la modélisation de l'écoulement des eaux souterraines est décrite étape par étape. Des définitions, une terminologie et une méthodologie générale sont proposées. L'accent est mis sur les choix conceptuels du modèle impliquant les processus à simuler, la parcimonie par rapport à la complexité et la dimensionnalité. Les conditions initiales et limites sont décrites et discutées. La conception du modèle et l'entrée des données sont abordées avec une description des différentes données d'entrée. L'étalonnage, la validation, l'analyse de sensibilité et la modélisation inverse sont résumés dans des cadres déterministes et probabilistes.

La méthode des différences finies est présentée pour des cas conceptuels simples afin de garder la description mathématique relativement simple. Les schémas d'intégration temporelle explicites, implicites, Crank-Nicolson et Galerkin sont décrits. Des recommandations utiles sont données au praticien en termes de discrétisations spatiales et temporelles et d'autres choix conceptuels.

- Terminologie et méthodologie générale
- Rappel des paramètres et équations d'écoulement
- Conditions aux frontières
- Principe de la méthode des différences finies
- Intégration temporelle

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