



Burcu Balcik

Ozyegin University, Istanbul, Turquie/Turkey



SITE SELECTION AND ROUTE PLANNING FOR HUMANITARIAN RAPID NEEDS ASSESSMENT OPERATIONS

Abstract: In this talk, we focus on humanitarian rapid needs assessment operations, which are conducted immediately after a disaster to investigate the effects of the disaster on the affected community groups. We address the problem of selecting the sites to be visited by the assessment teams during a fixed assessment period and constructing assessment routes under travel time uncertainty. We represent uncertain travel times by specifying a range of values and propose a robust optimization approach, which ensures that each constructed route is feasible for all realizations of the uncertain parameters that lie in a predetermined uncertainty set. We present tractable formulations that are robust with respect to different uncertainty sets and propose using the robust formulation with a co-axial box uncertainty set for rapid assessment planning. We develop an efficient tabu search heuristic to solve the proposed model. We present computational results to test our solution method and illustrate our approach on a case study, which is based on data from Van (a southeastern province of Turkey) earthquake in October 2011. This study is joint work with Ihsan Yanikoglu, and was funded by the Scientific and Technological Research Council of Turkey (TUBITAK) Career Award [#213M414].

Note: Burcu Balcik is an Associate Professor in Industrial Engineering Department at Ozyegin University, Istanbul, Turkey. She got her Ph.D. in Industrial and Systems Engineering from University of Washington in 2008. She worked as a Postdoctoral researcher at Industrial Engineering and Management Sciences Department at Northwestern University and as a visiting researcher at HUMLOG Institute. She is currently a visiting researcher at HEC Montreal and Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation (CIRRELT). Dr. Balcik's research focuses on the design and management of humanitarian supply chain networks and logistics operations. Her work has addressed distribution network design, last mile distribution, supplier selection, vehicle routing, and resource allocation problems that arise in various humanitarian and non-profit settings. Currently, she is a visiting researcher at HEC Montreal and CIRRELT (until August 2018). Burcu.Balcik@cirrelt.ca and <https://faculty.ozyegin.edu.tr/burcub/>

JEUDI / THURSDAY

22 mars 2018 /
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