Optimisation of maintenance routing and scheduling for offshore wind farms
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Abstract	An optimisation model and a solution method for maintenance routing and scheduling at offshore wind farms are proposed. The model finds the optimal schedule for maintaining the turbines and the optimal routes for the crew transfer vessels to service the turbines along with the number of technicians required for each vessel. The model takes into account multiple vessels, multiple periods (days), multiple Operation & Maintenance (O&M) bases, and multiple wind farms. We develop an algorithm based on the Dantzig–Wolfe decomposition method, where a mixed integer linear program is solved for each subset of turbines to generate all feasible routes and maintenance schedules for the vessels for each period. The routes have to consider several constraints such as weather conditions, the availability of vessels, and the number of technicians available at the O&M base. An integer linear program model is then proposed to find the optimal route configuration along with the maintenance schedules that minimise maintenance costs, including travel, technician and penalty costs. The computational experiments show that the proposed optimisation model and solution method find optimal solutions to the problem in reasonable computing times.

Related Pictures (if any)	