

and Narew National Park for sharing data from Narew National Park Weather Station.

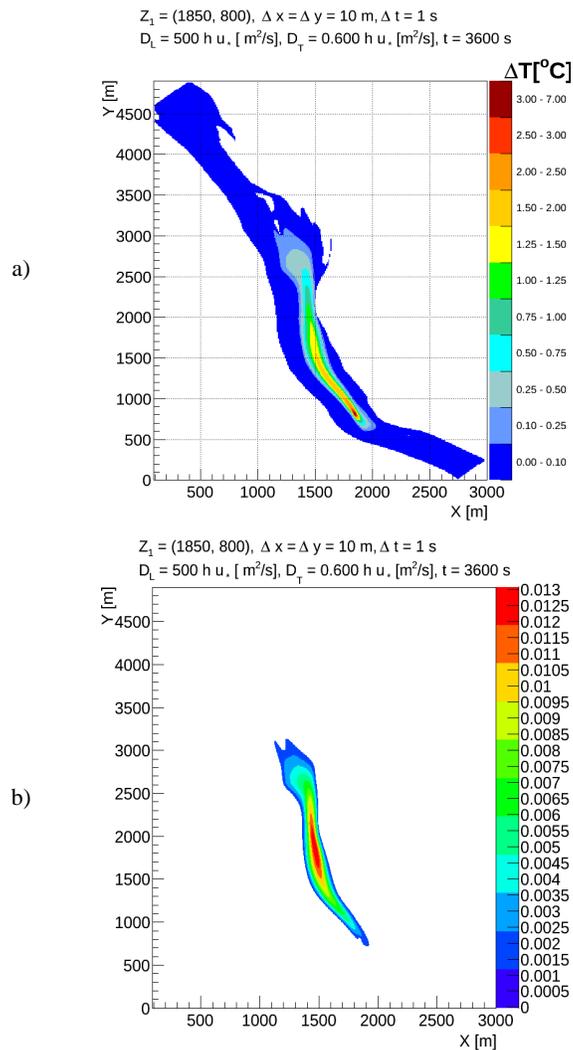


Fig. 5 Real case study with heated water discharged from a designed gas-steam power plant in the Vistula River a) predicted temperature increase (ΔT) with the exemplary heat flux include in the calculation; b) the difference in temperature increase with and without exemplary heat flux included in the calculation.

REFERENCES

Abramowitz, G.L.P., Ajami H. (2012). On the information content of surface meteorology for downward atmospheric long-wave radiation synthesis. *Geophys. Accepted Article Res. Lett.*, 39(4), L04808.

Berger X., Buriot D., Garnier F. (1984). About the equivalent radiative temperature for clear skies. *Solar Energy* 32: 725-733.

Brunt, D. (1932). Notes on radiation in the atmosphere. *Q. J. R. Meteorol. Soc.*, 58: 389-420.

Brutsaert, W. (1975). On a derivable formula for long-wave radiation

from clear skies. *Water Resour. Res.*, 11, 742-744.

Chapra S.C. (2008). *Surface water-quality modeling*. Waveland Press.

Czernuszenko W. (1990). Dispersion of pollutants in flowing surface water. In: *Encyclopedia of fluid mechanics, surface and groundwater flow phenomena*, vol 10, Gulf Publishing Company, chap 4: 119-168.

Evans E.C., McGregor G.R., Petts G.E. (1998). River energy budgets with special reference to river bed processes. *Hydrol. Process.*, 12: 575-595.

Flerchinger G.N., Xaio W., Marks D., Sauer T.J., Yu Q. (2009). Comparison of algorithms for incoming atmospheric long-wave radiation, *Water Resour. Res.*, 45: W03423.

Heitor A., Biga A.J., Rosa R. (1991). Thermal radiation components of the energy balance at the ground. *Agric. For. Meteorol.*, 54: 29-48.

Johnson S.L. (2004). Factors influencing stream temperatures in small streams: substrate effects and a shading experiment. *Can. J. Fish. Aquat. Sci.*, 61: 913-923.

Kalinowska M.B., Rowinski P.M. (2008). *Numerical solutions of two-dimensional mass transport equation in flowing surface waters*, in: Monographic Volume, Publications of the Institute of Geophysics, vol. E-8(404), Polish Academy of Sciences, Warsaw.

Kalinowska M.B., Rowiński P.M. (2012). Uncertainty in computations of the spread of warm water in a river - lessons from Environmental Impact Assessment case study. *Hydrol. Earth Syst. Sci.* 16: 4177-4190.

Kalinowska M.B., Rowiński P.M., Kubrak J., Mirosław-Swiątek D. (2012). Scenarios of the spread of a waste heat discharge in a river - Vistula River case study. *Acta Geophys.* 60: 214-231.

Kalinowska M.B., Rowiński P.M. (2015). Thermal pollution in rivers - modelling of the spread of thermal plumes, in *Rivers - physical, fluvial and environmental processes*, Rowiński P.M., Radecki-Pawlik A. (eds), Springer.

Monteith, J.L. (1961). An empirical method for estimating long-wave radiation exchanges in the British Isles. *Q. J. R. Meteorol. Soc.* 87: 171-179.

Rajwa A., Rowiński P.M., Bialik R.J., Karpiński M. (2014). Stream diurnal profiles of dissolved oxygen - case studies, in 3rd IAHR Europe Congress, Porto

Rajwa-Kuligiewicz A., Bialik R.J., Rowiński P.M. (2015). Dissolved oxygen and water temperature dynamics in lowland rivers over various timescales. *J. Hydrol. Hydromech.*, 63(4): 353-363

Rutherford J.C. (1994). *River Mixing*. Wiley, Chichester, UK

Rowiński P.M., Kalinowska M.B. (2006). Admissible and inadmissible simplifications of pollution transport equations, in: *River Flow 2006: Proceedings of the International Conference on Fluvial Hydraulics*, Lisbon, Portugal, 6-8 September 2006, edited by Ferreira R.M.L., Alves E.C.T.L., Leal J.G.A.B., Cardoso A.H., Taylor and Francis, 199-209.

Sellers, W.D. (1965). *Physical Climatology*. University of Chicago Press, Chicago.

Swinbank, W.C. (1963). Long-wave radiation from clear skies. *Q. J. R. Meteorol. Soc.* 89: 339-348.

Szymkiewicz R. (2010). *Numerical Modeling in Open Channel Hydraulics*, vol. 83 of Water Science and Technology Library, Springer.

Webb B.W., Zhang Y. (1999). Water temperatures and heat budgets in Dorset chalk water courses. *Hydrol. Process.* 13: 309-321.