Appendix B. Summer MHB Surface Temperature Maps

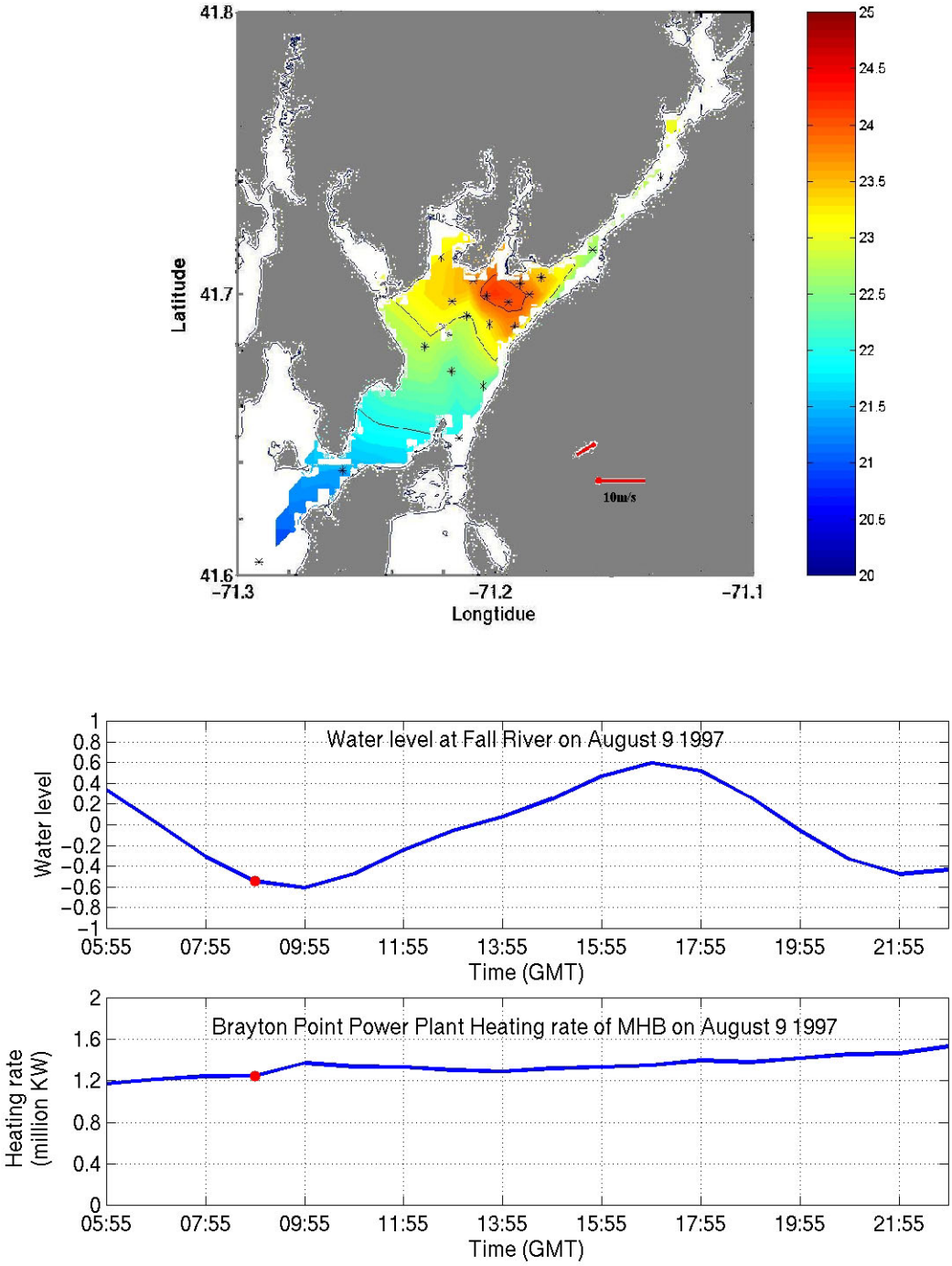

Figure B1. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

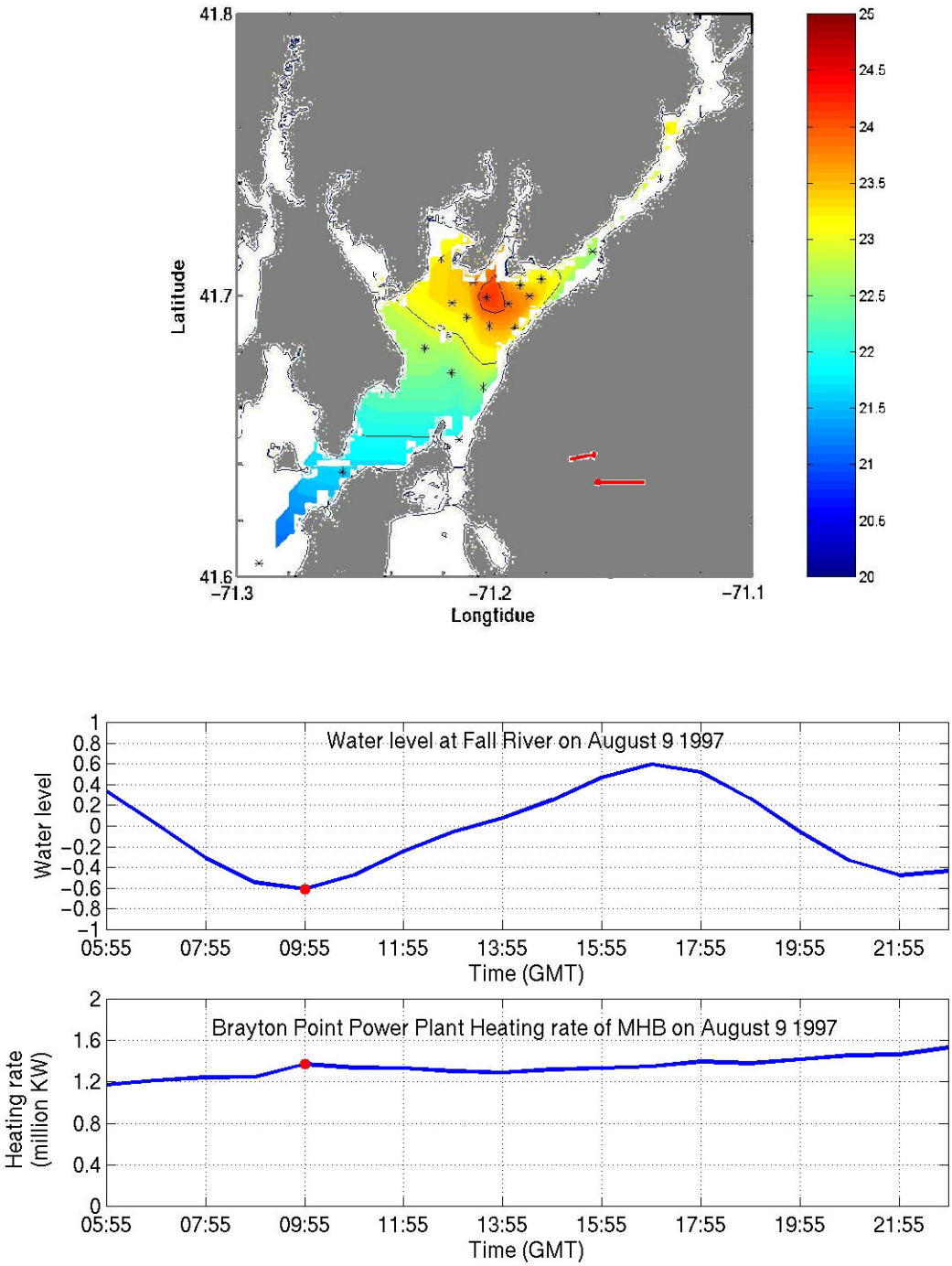

Figure B2. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

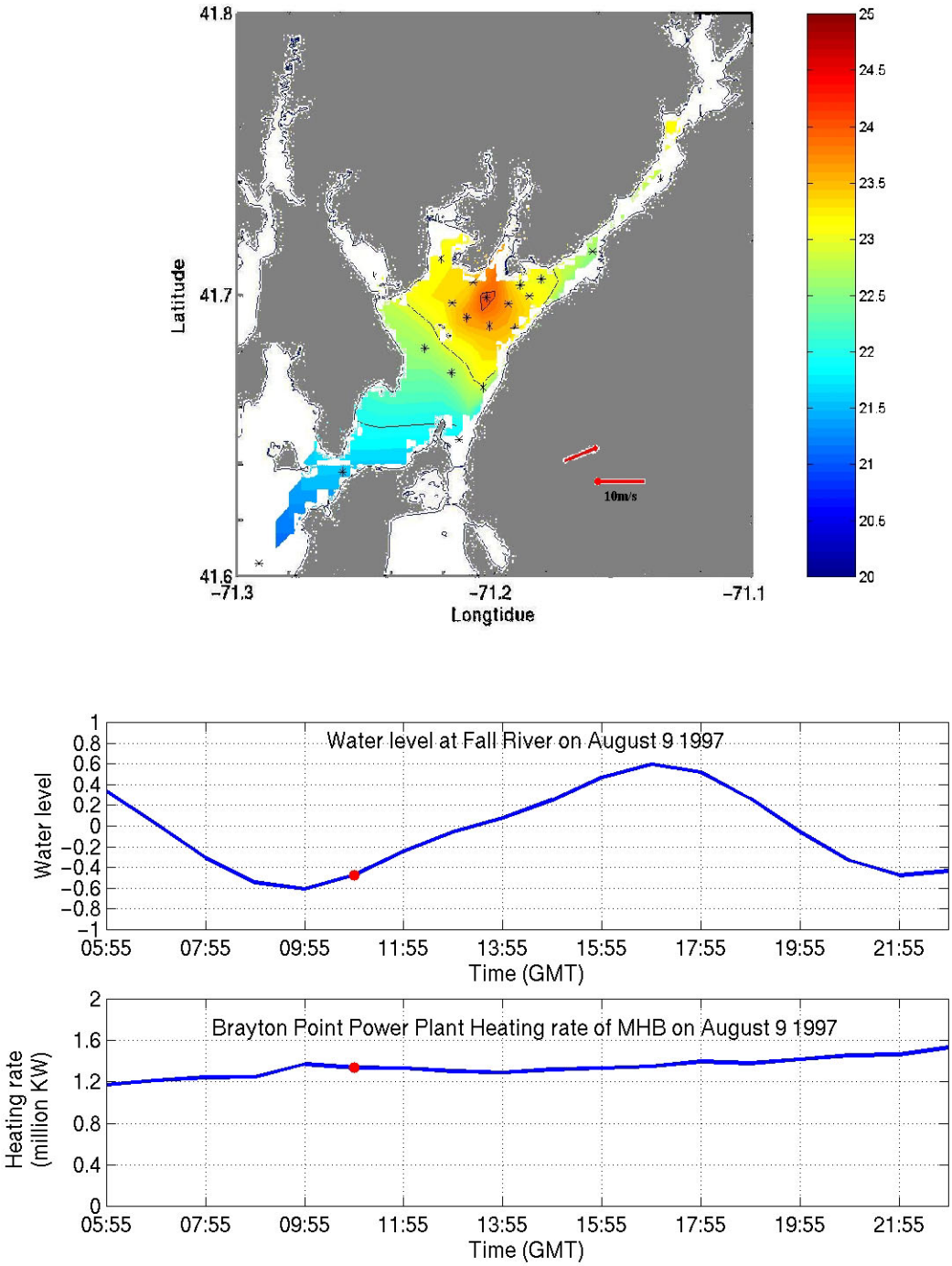

Figure B3. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

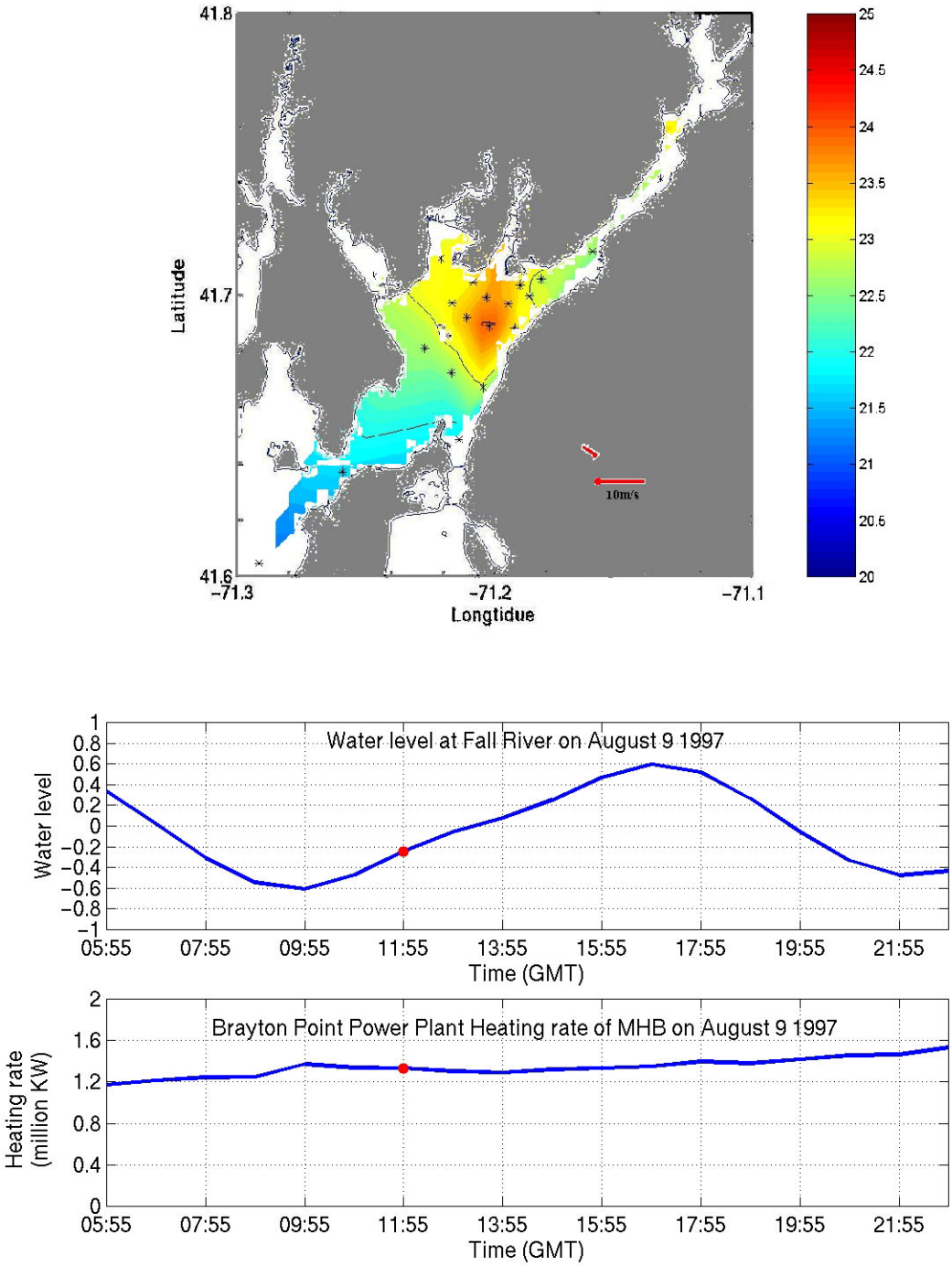

Figure B4. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

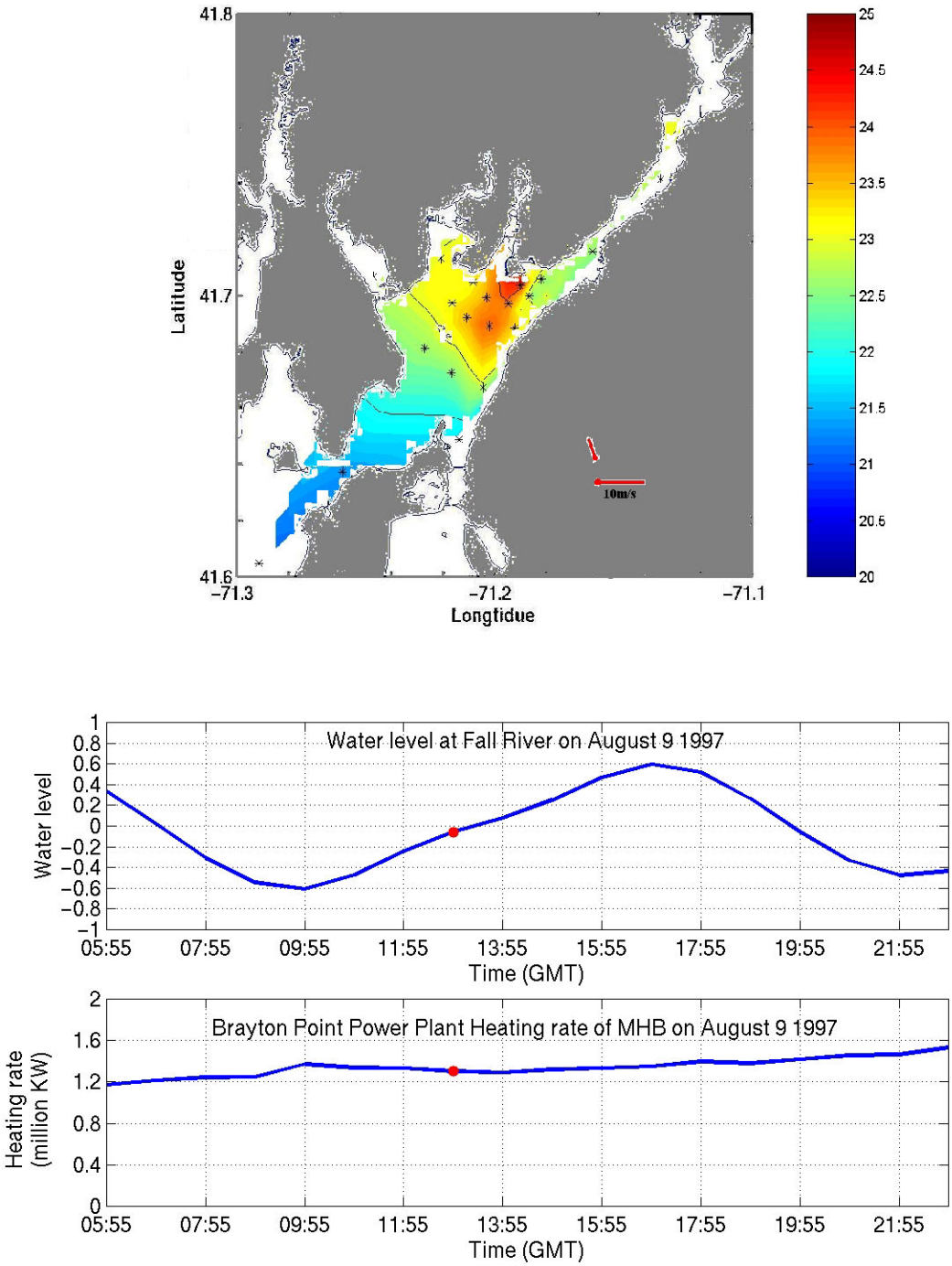

Figure B5. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

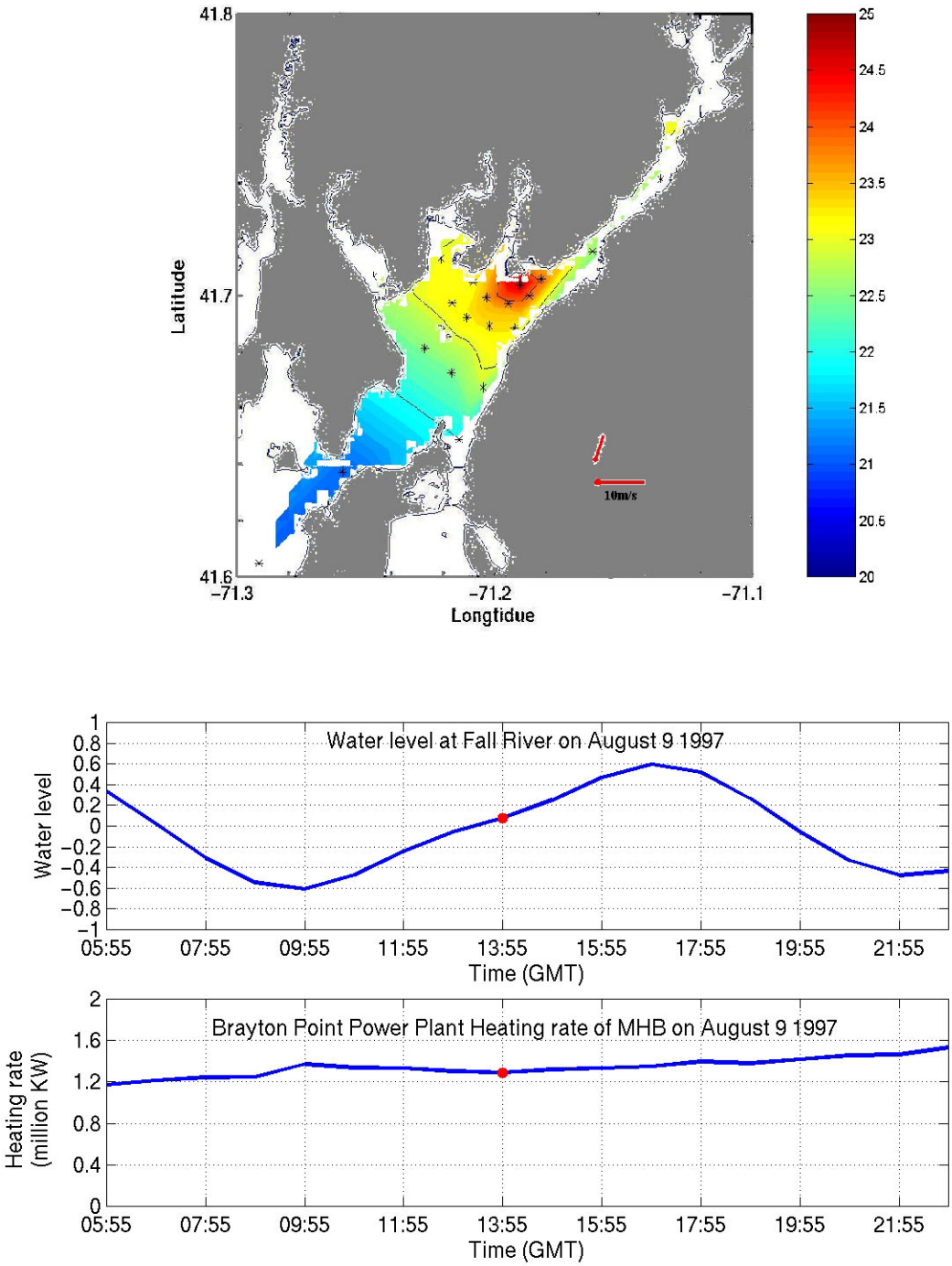

Figure B6. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

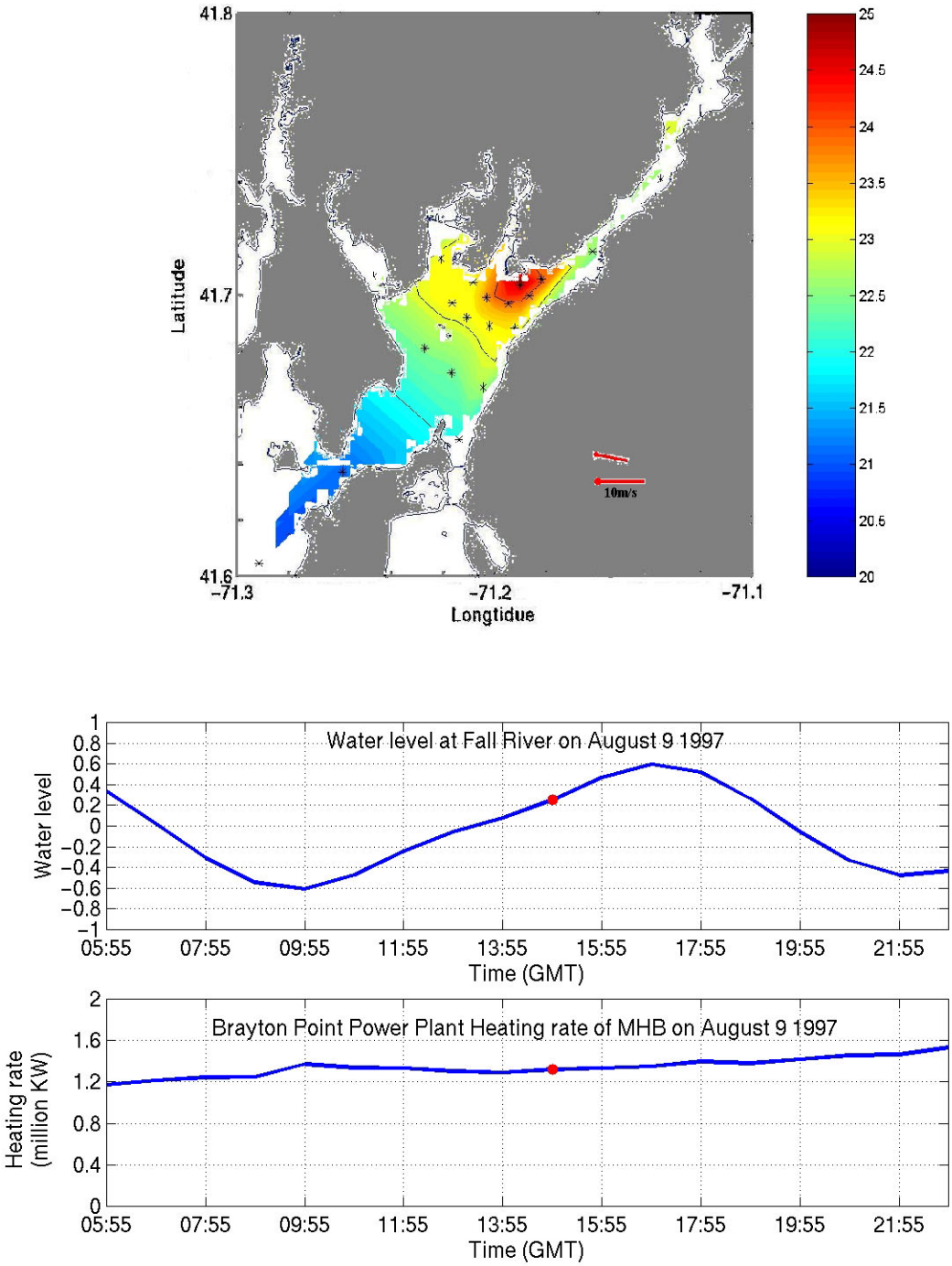

Figure B7. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

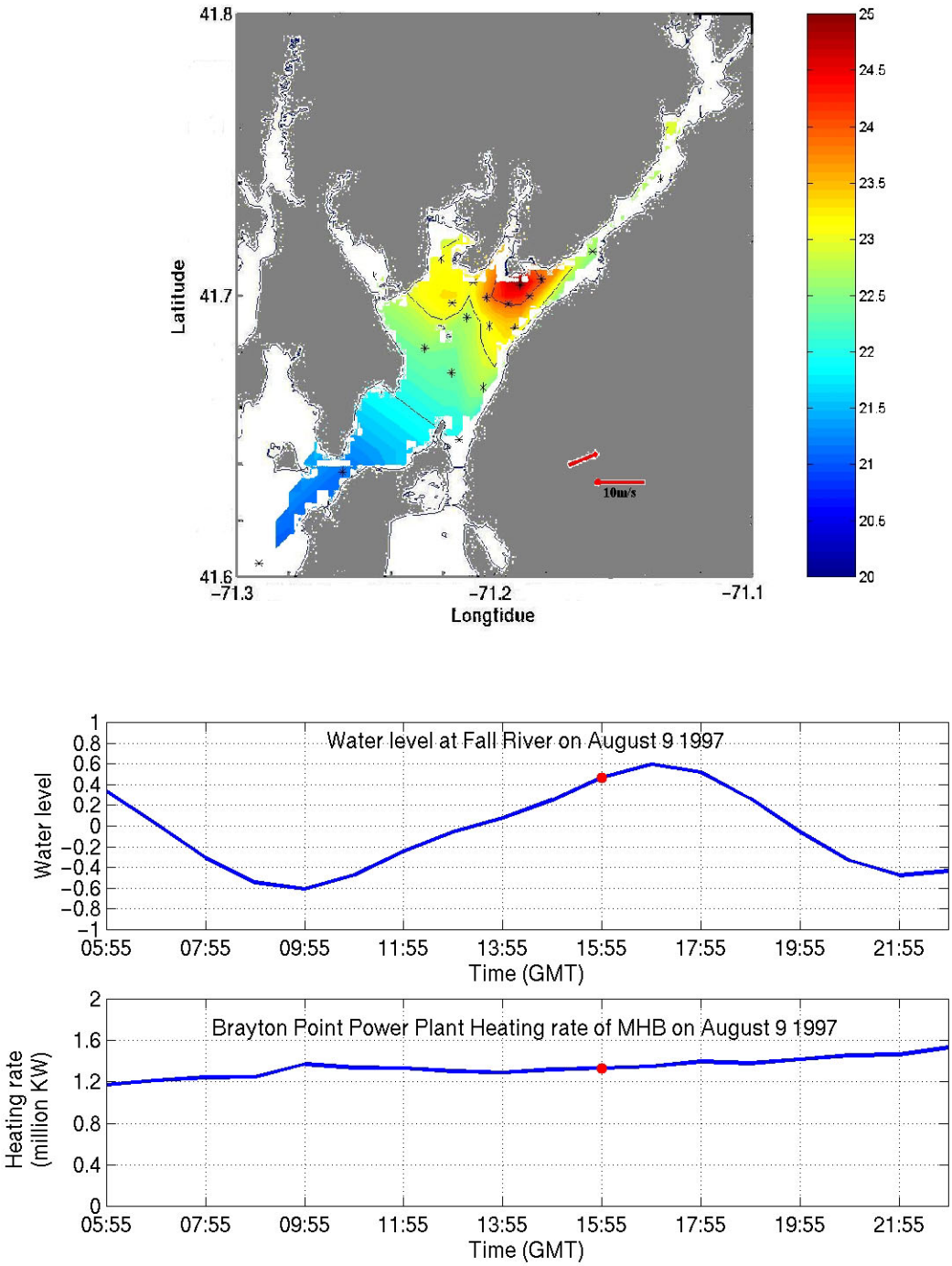

Figure B8. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

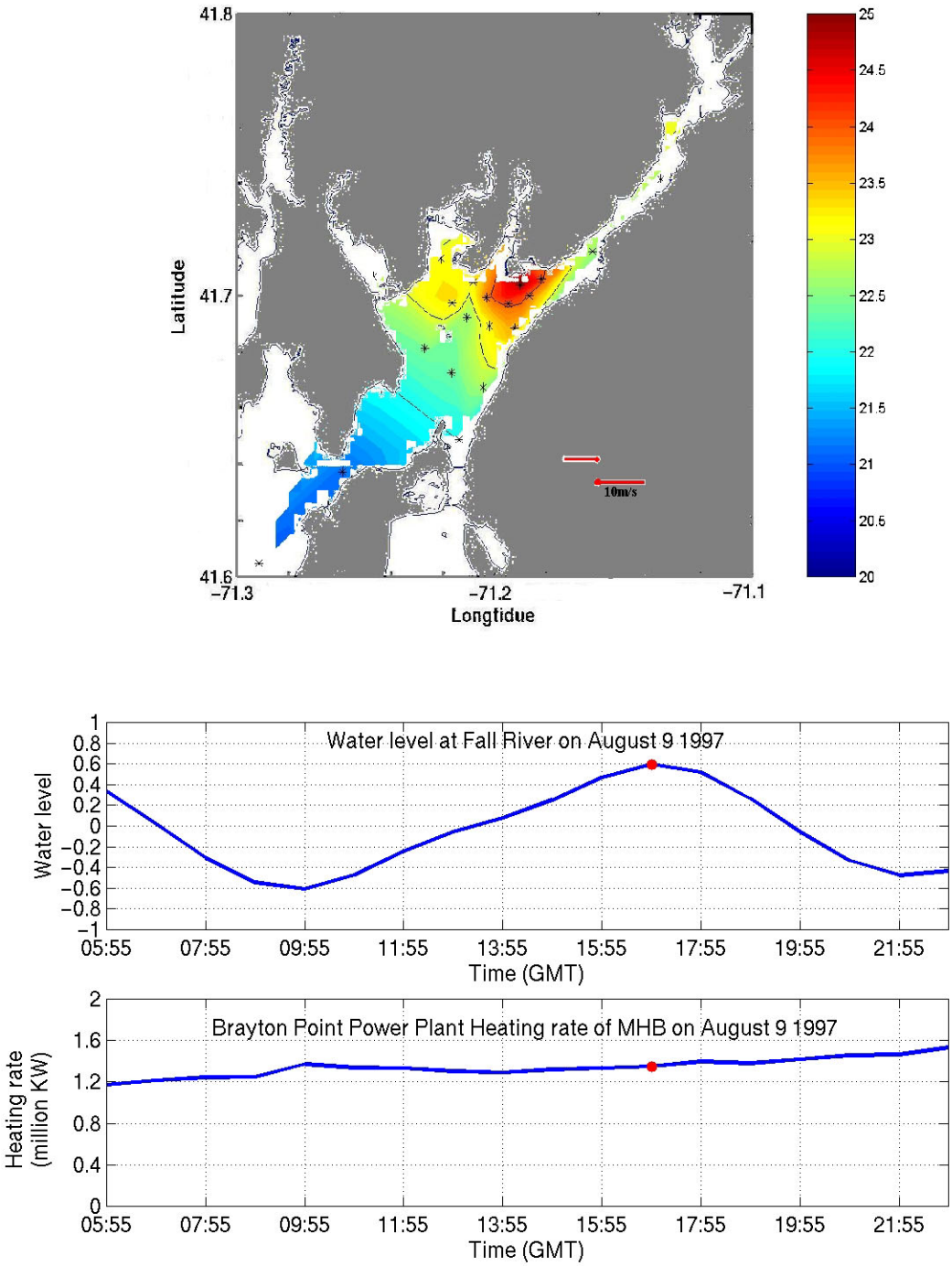

Figure B9. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

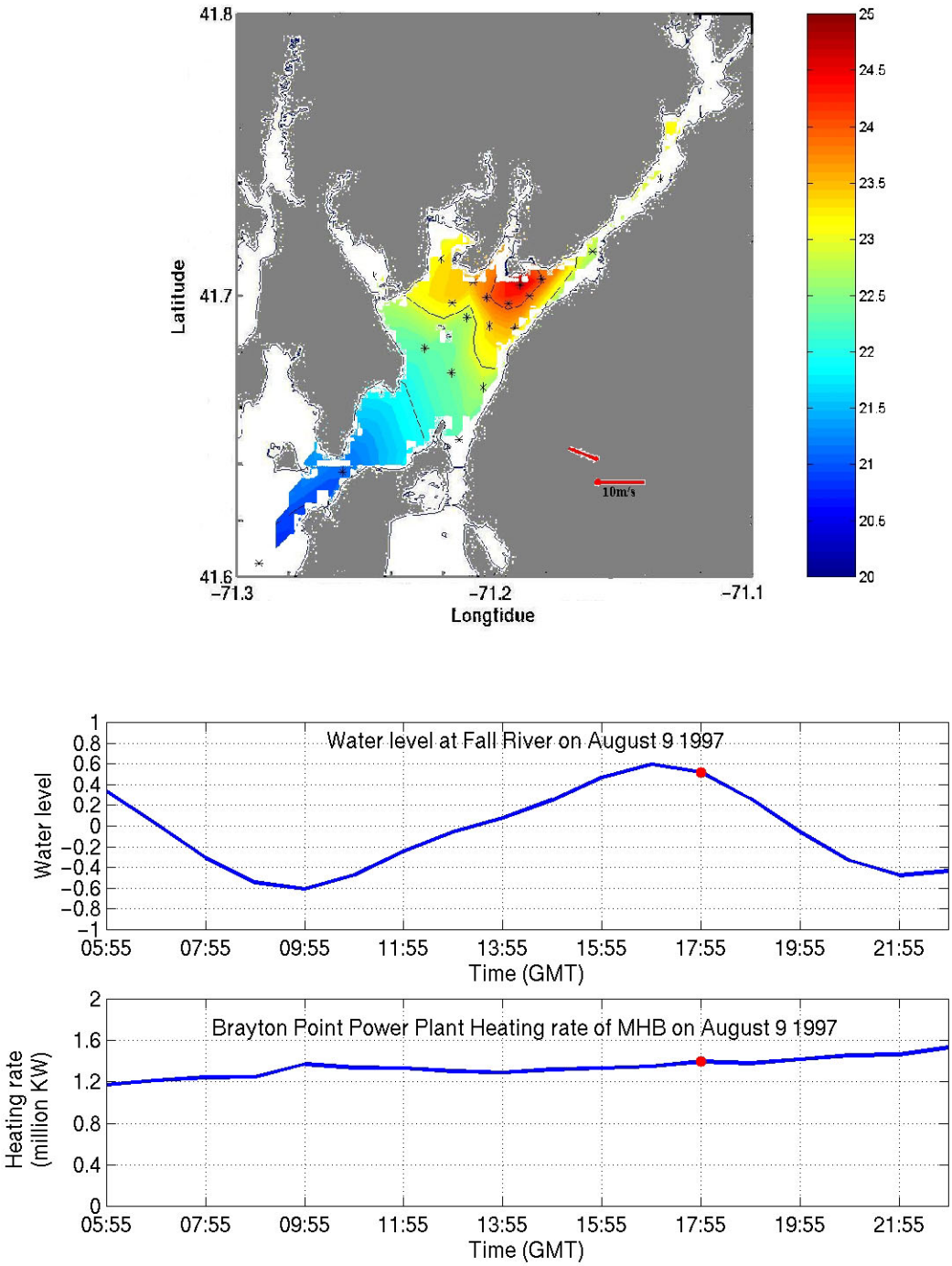

Figure B10. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

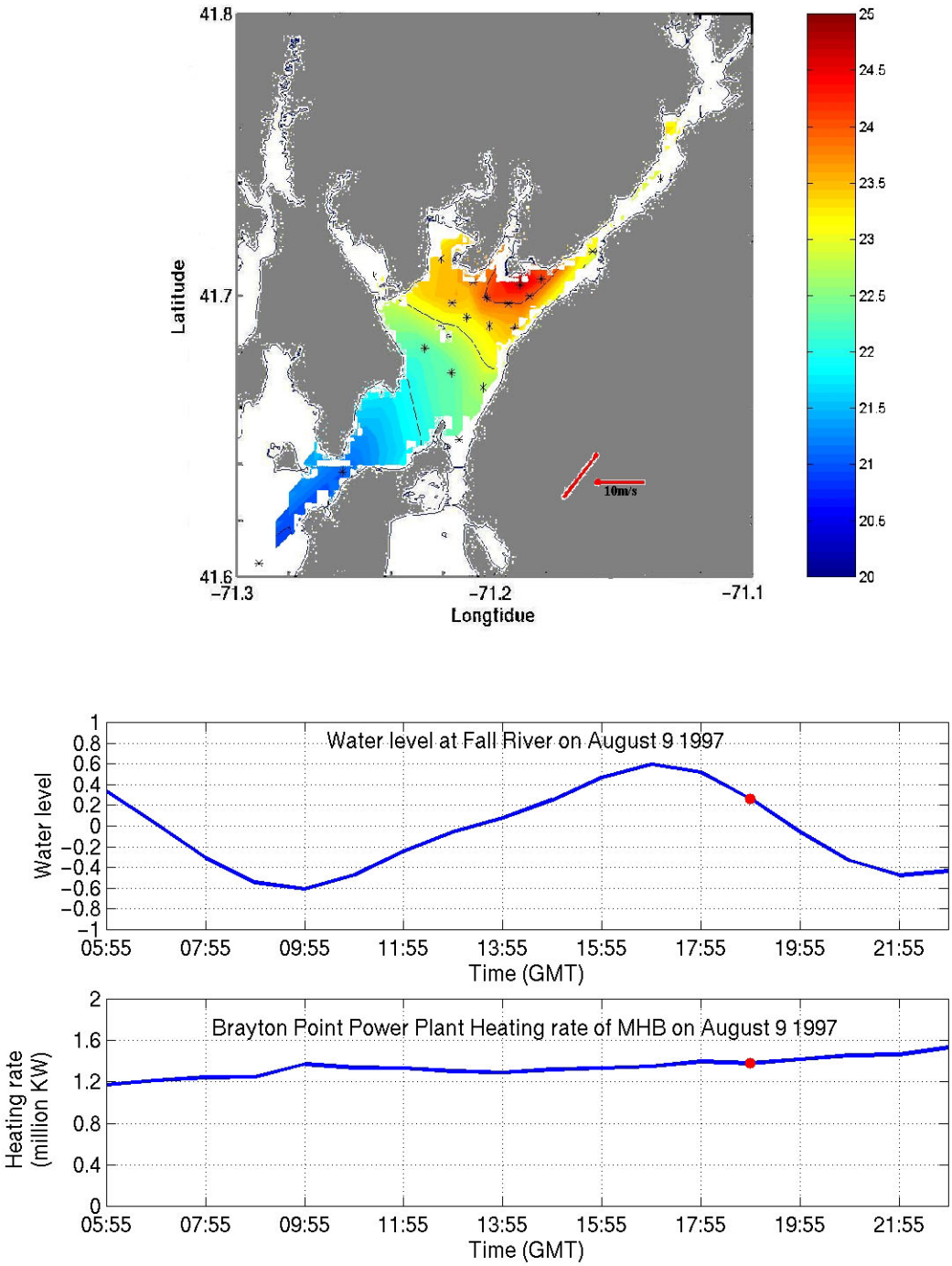

Figure B11. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

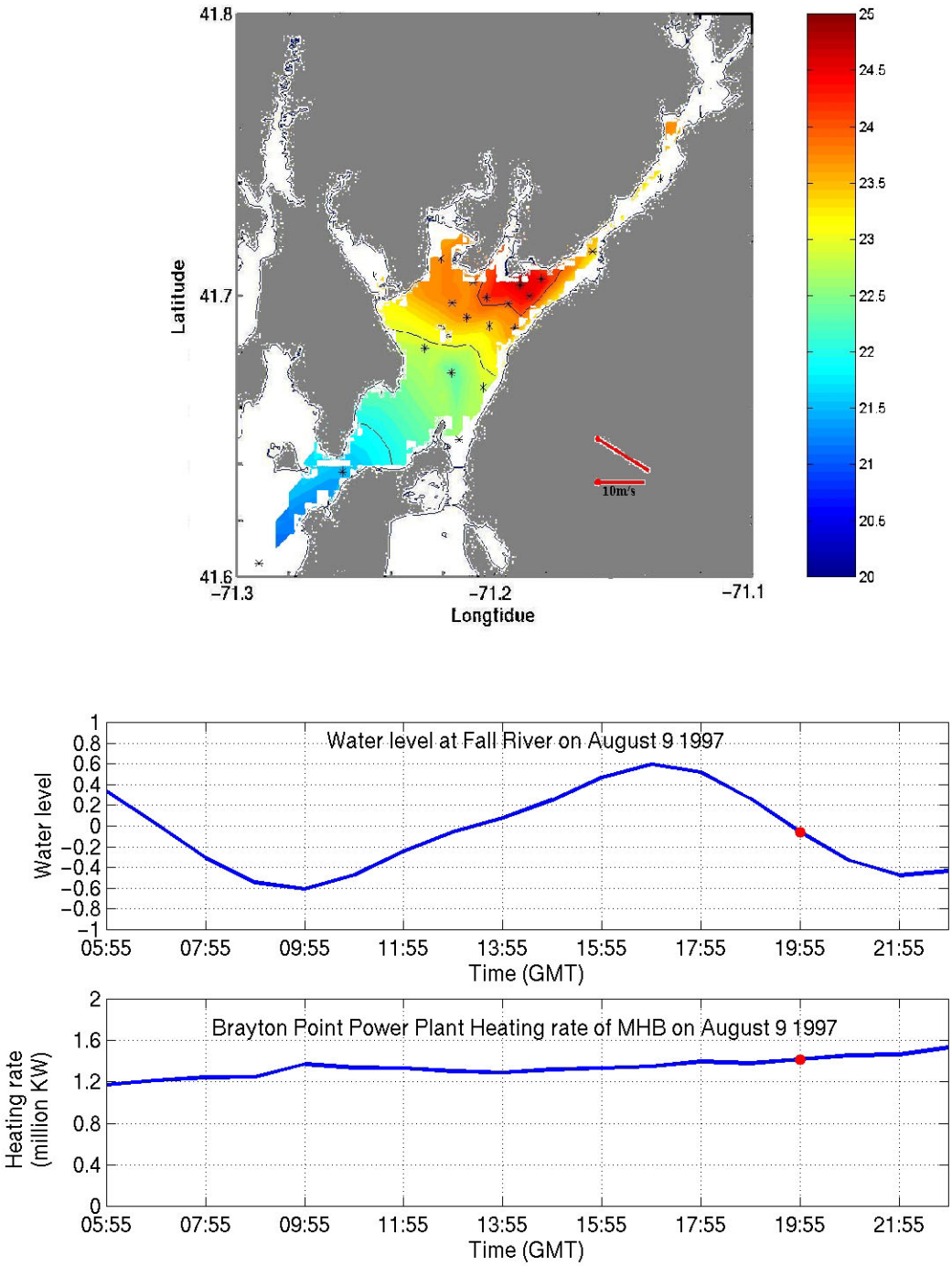

Figure B12. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

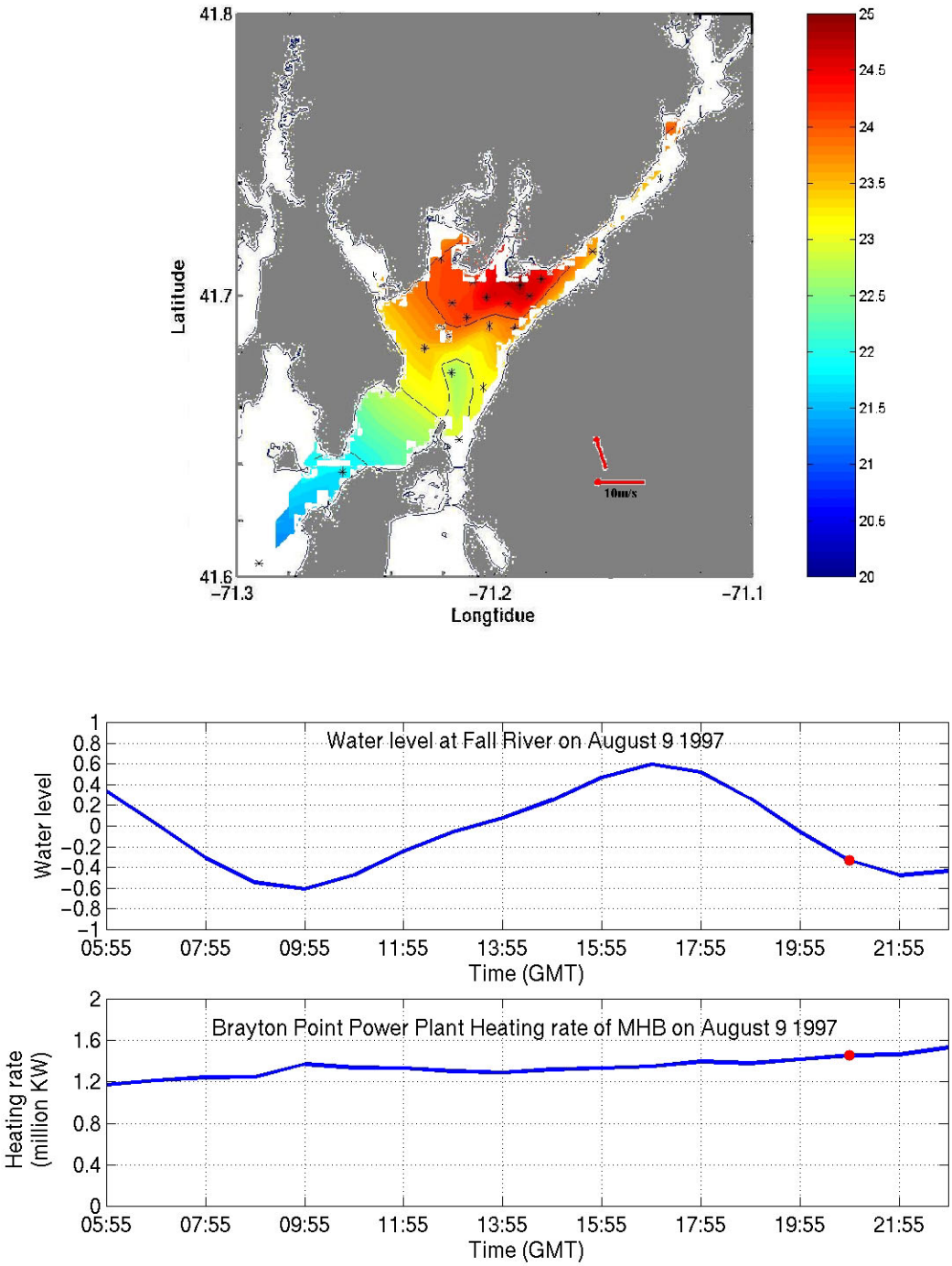

Figure B13. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

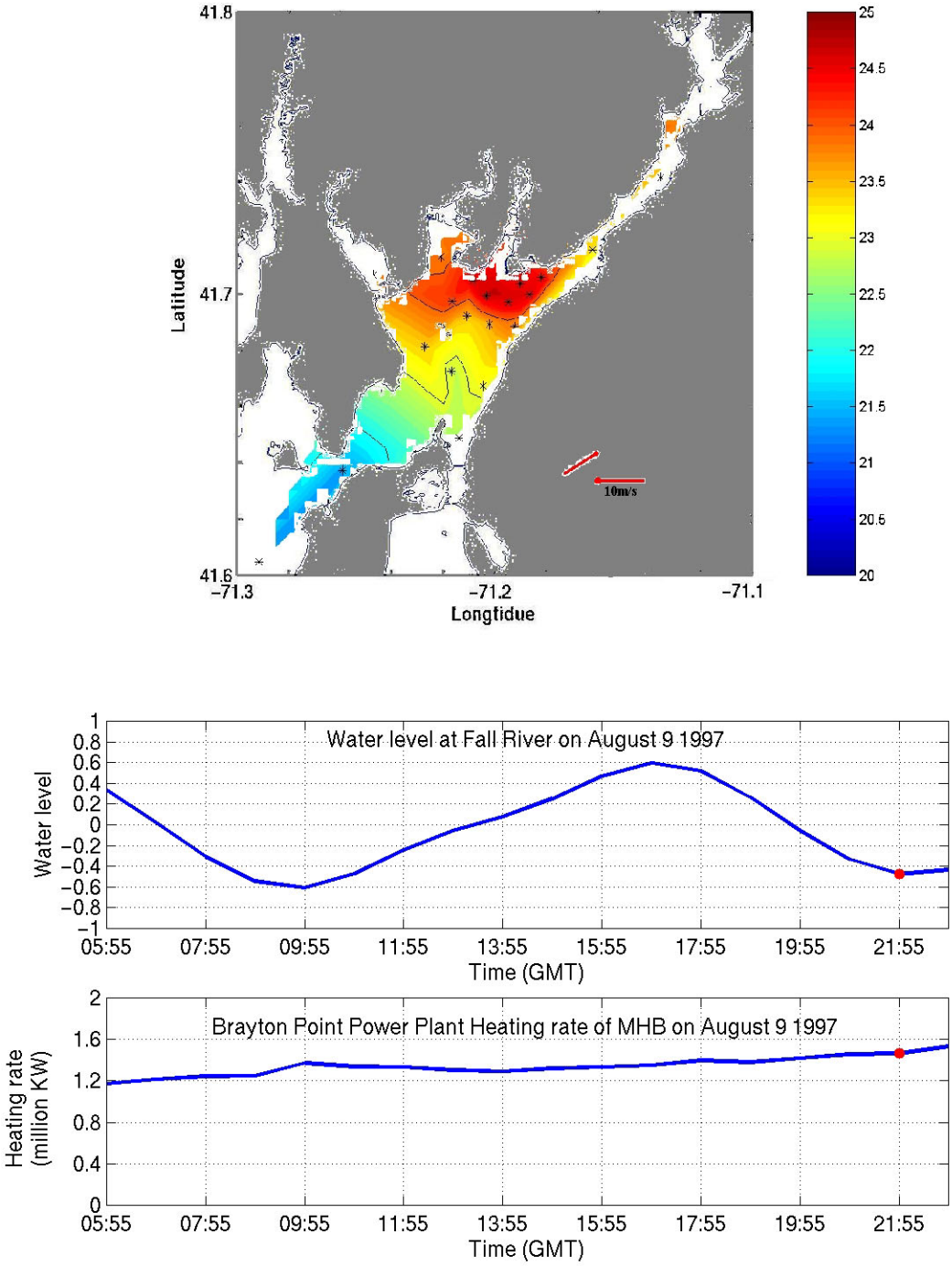

Figure B14. The surface temperature structure in Mt. Hope Bay on 9 August 1999. The relevant values of Fall River sea level and BPPS heating rate are indicated (red dots) in the middle and lower panels, respectively.

Appendix C: Sensitivity Testing

The accuracy of T_{MHB} is subject to the significant uncertainties in the quantities that were used to estimate the Bay cooling. Therefore, we tested the sensitivity of MHB temperature T_{MHB} (Eq (12)) to a range of values for relative humidity, wind speed, and long-wave radiation through their effects on vertical heat flux. For these tests, we assumed a constant long-wave radiation $Q_b = -100$ Watt/m^2 and 3% tidal mixing.

Sensitivity to relative humidity uncertainty. Figure C1 shows that relative humidity uncertainties of ±20% produce Bay temperature uncertainties of ±6.5°C.

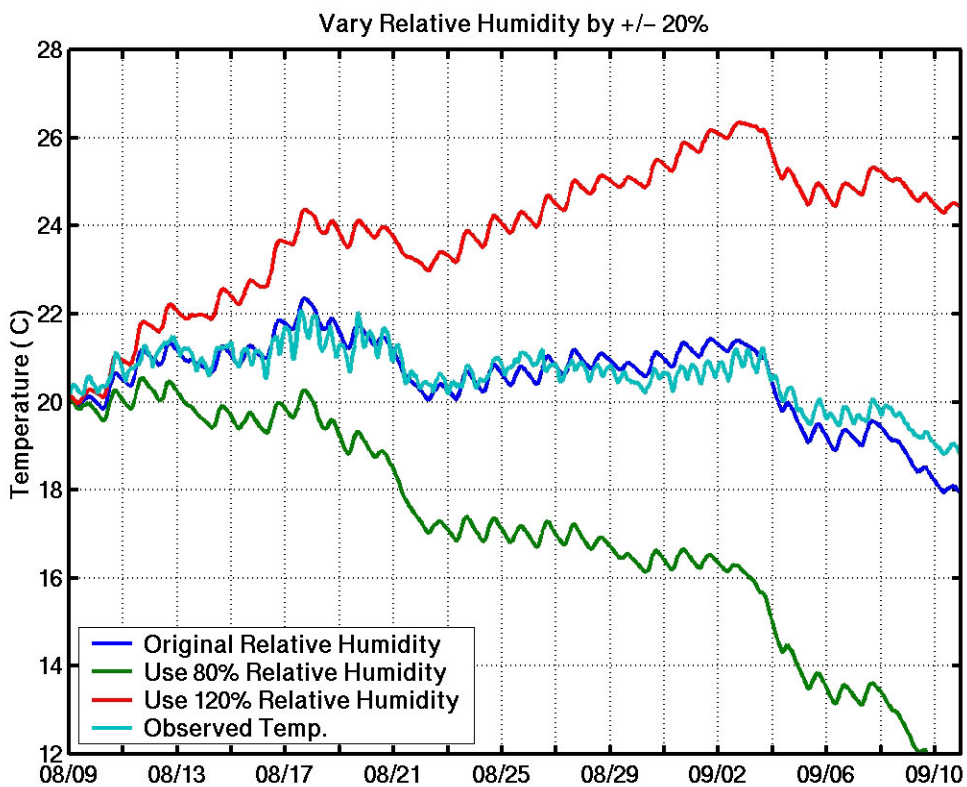

Figure C1. Model MHB temperatures (Eq (12)) due to relative humidity values that are ±20% relative to the reference case relative humidity. The volume average measured MHB temperature (dark blue) and model MHB temperature (blue-green) are given for reference.

Sensitivity to wind speed uncertainty. Figure C2 shows that wind speed uncertainties of ±20% produce Bay temperature uncertainties of ±2.3°C.

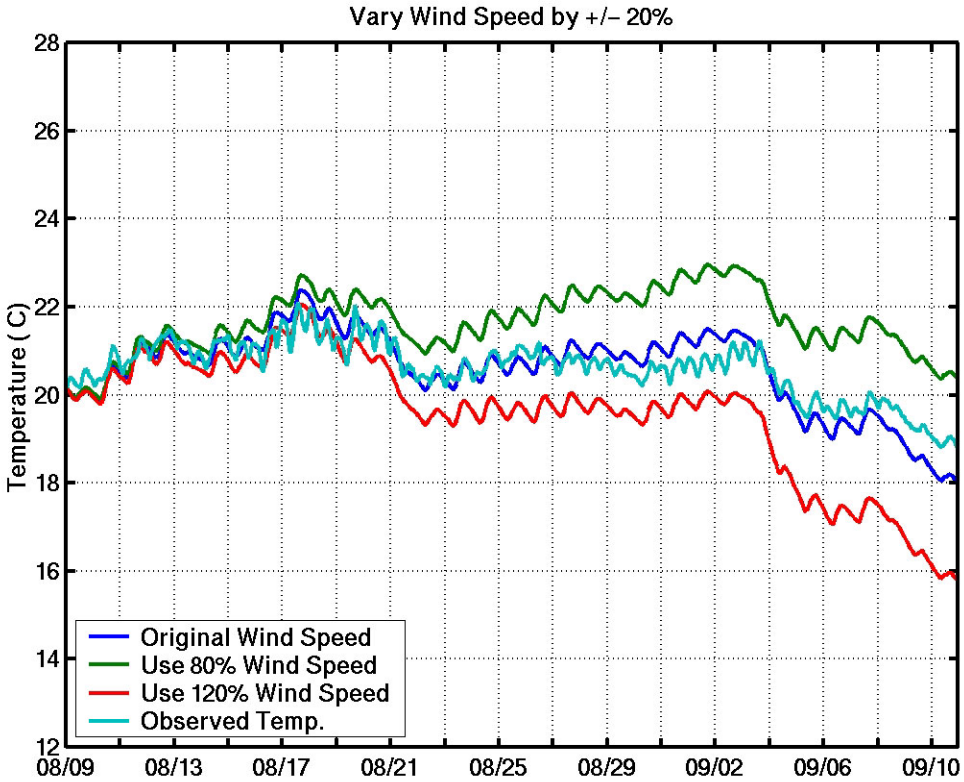

Figure C2. Model MHB temperatures (Eq (12)) due to wind speed values that are ±20% relative to the reference case wind speeds. The volume-averaged measured MHB temperature (dark blue) and model MHB temperature (blue-green) are given for reference.

Sensitivity to long-wave radiation (Q_b) uncertainty. Figure C3 shows that long-wave radiation uncertainties of ±20% produce Bay temperature uncertainties of ±2.3°C.

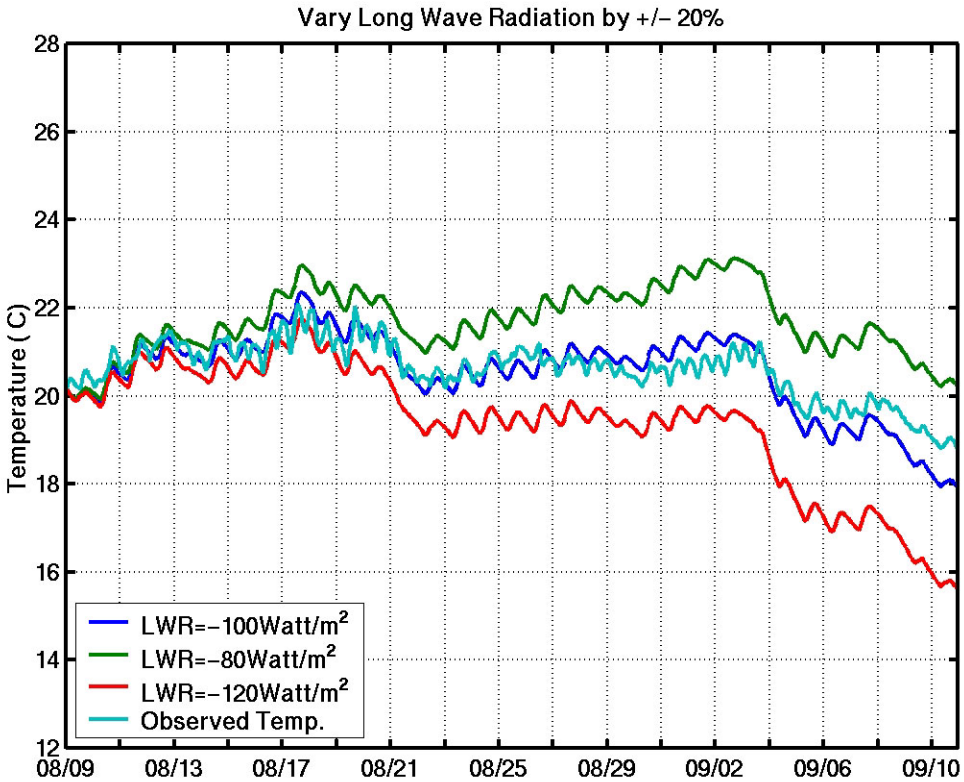

Figure C3. Model MHB temperatures (Eq (12)) due to long-wave radiation values that are ±20% relative to the reference case long-wave radiation. The volume-averaged measured MHB temperature (dark blue) and model MHB temperature (blue-green) are given for reference.