# SN 2011dh and Type IIb SNe

A few selected topics from forthcoming papers

M. Ergon, A. Jerkstrand, J. Sollerman, N. Elias-Rosa, C. Fransson, M. Fraser, A. Pastorello, S. Taubenberger, L. Tomasella, S. Valenti, S. Benetti, M. Bersten, J. Maund, R. Kotak, S. J. Smartt, J. Spyromilio, M.T Boticella, A. Harutyunyan, F. Bufano, E Capparello, M. Fiaschi, A. Howell, E Kankare, L. Magill, S. Mattila, R. Naves, P. Ochner, J. Ruiz, K. Smith, M. Turatto.
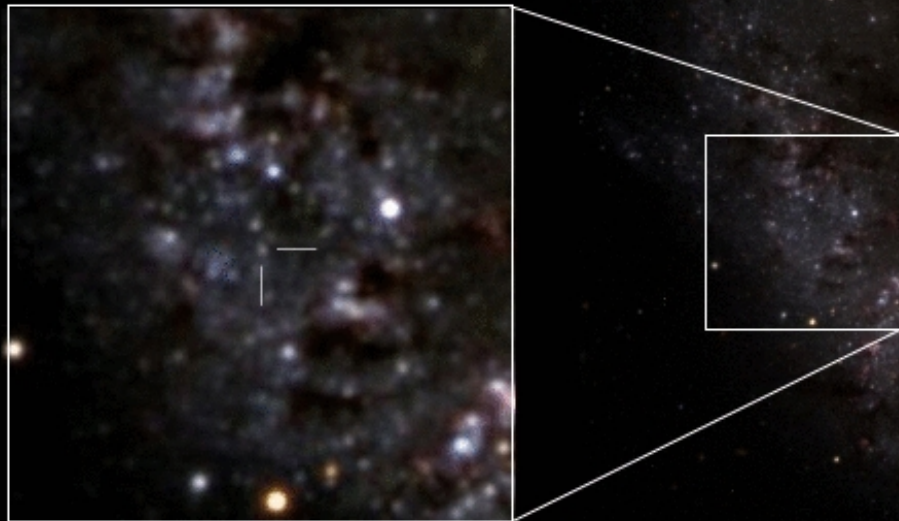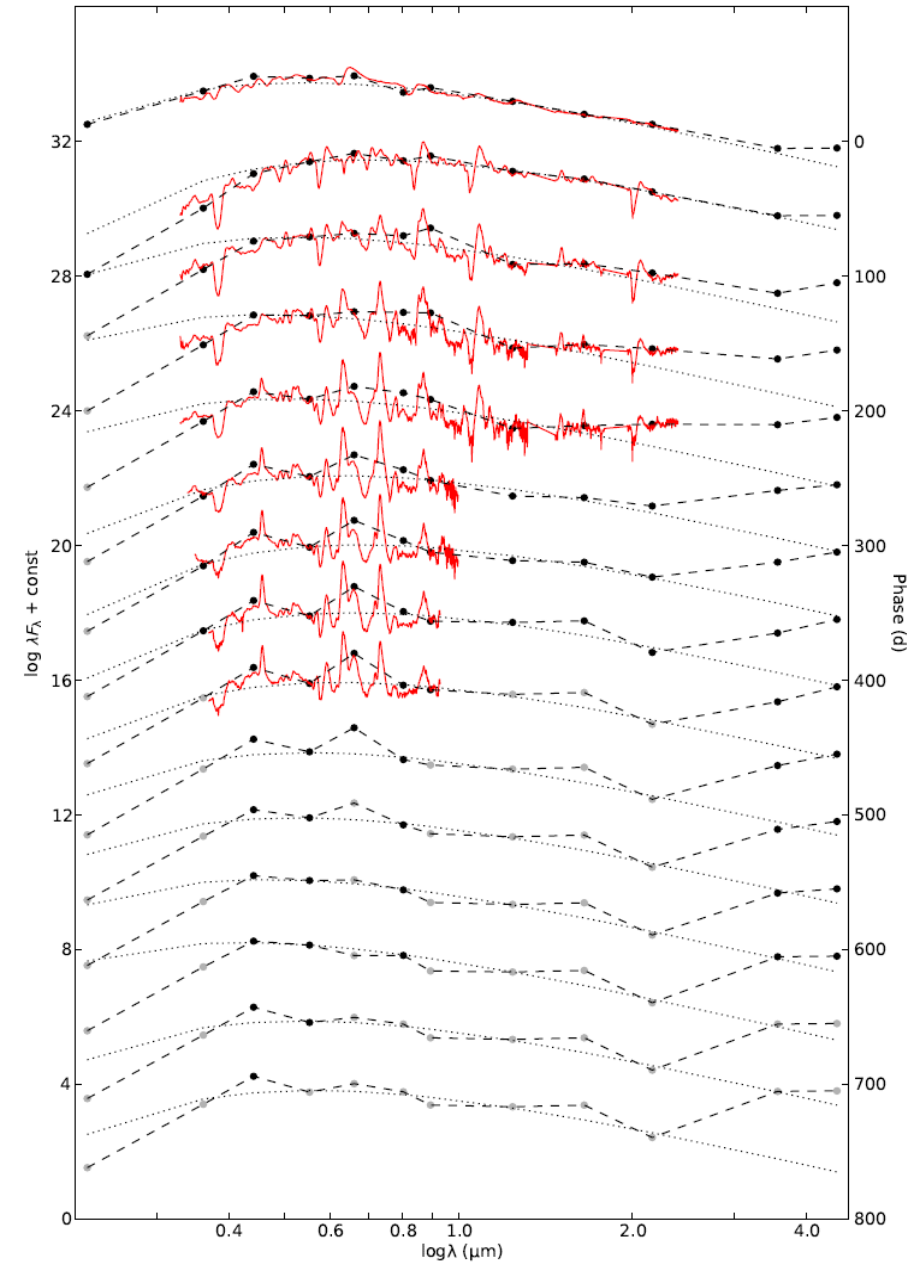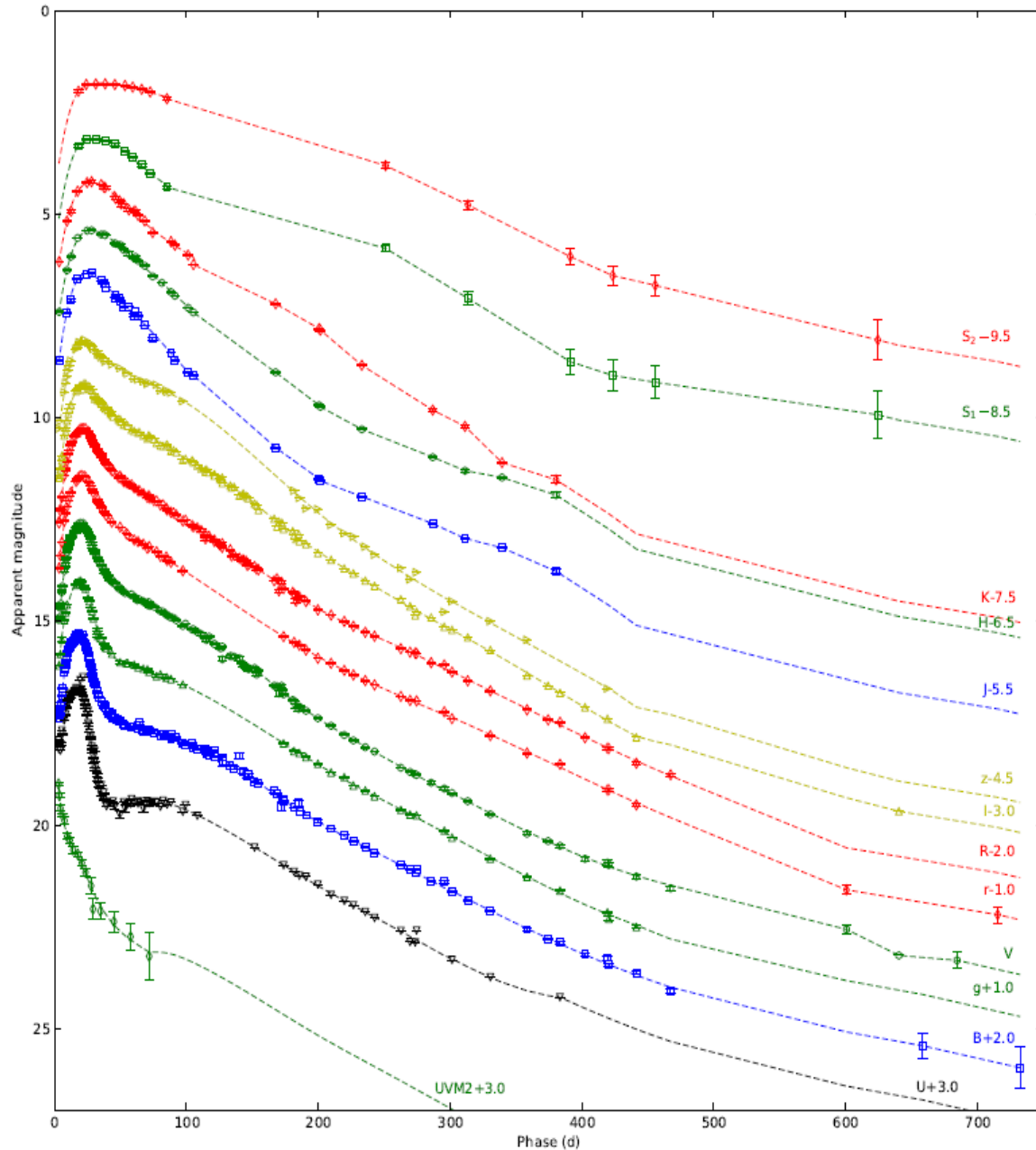
SN 2011dh: Observations (Ergon et al. 2014a,b)
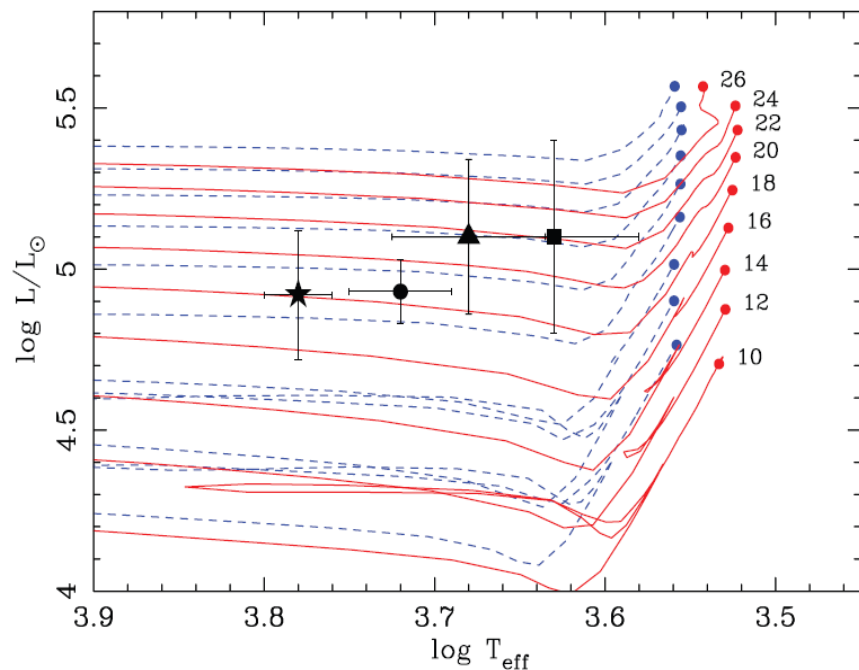
Photometric coverage
UV: <100 days, Optical: <750 days, NIR: <400 days, MIR: Still monitoring

Spectral coverage
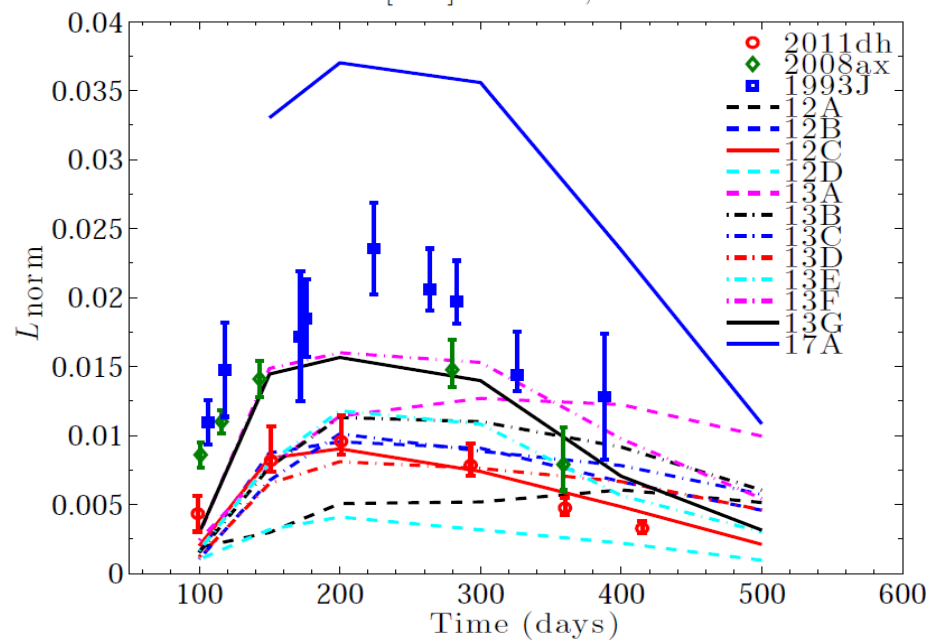### Optical: <450 days, NIR <200 days

Comparison to stellar evolutionary modelling (Maund et al. 2011)

Steady-state NLTE modelling (Jerkstrand et al. 2014)
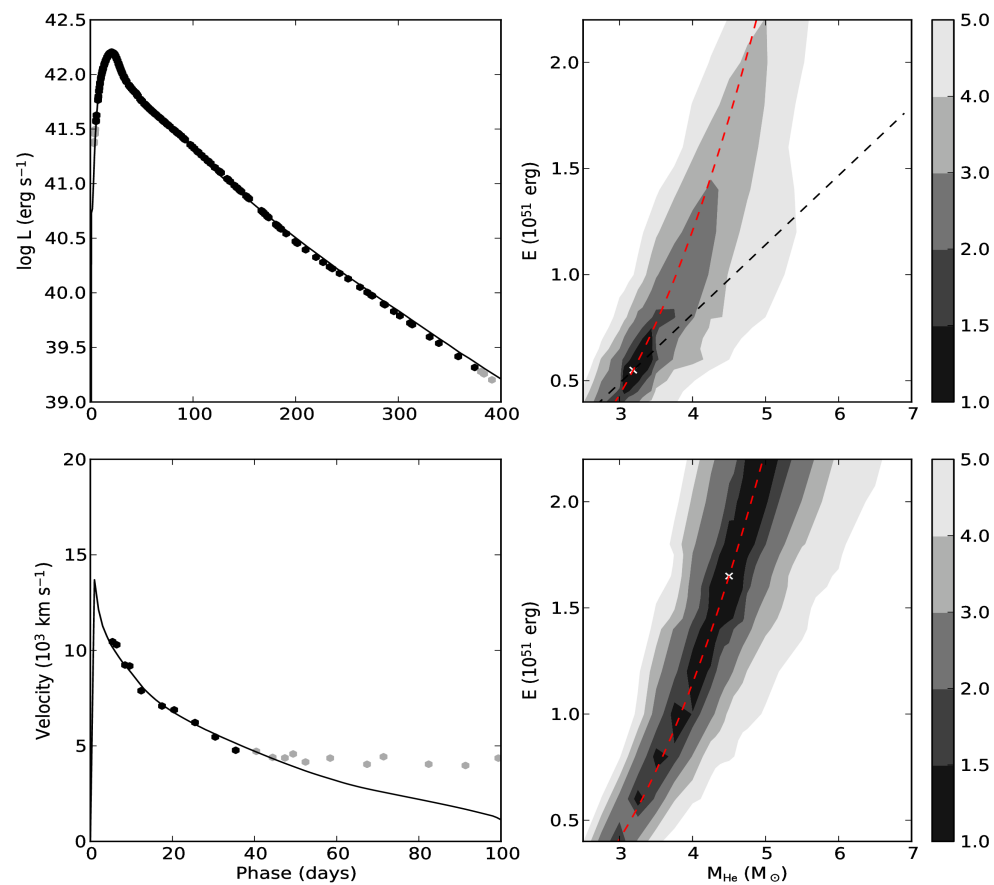
[O I] $\lambda\lambda$6300, 6364

SN 2011dh: Initial mass

$Progenitor\ luminosity : M_{ZAMS} \sim 13\ M_{\odot}$

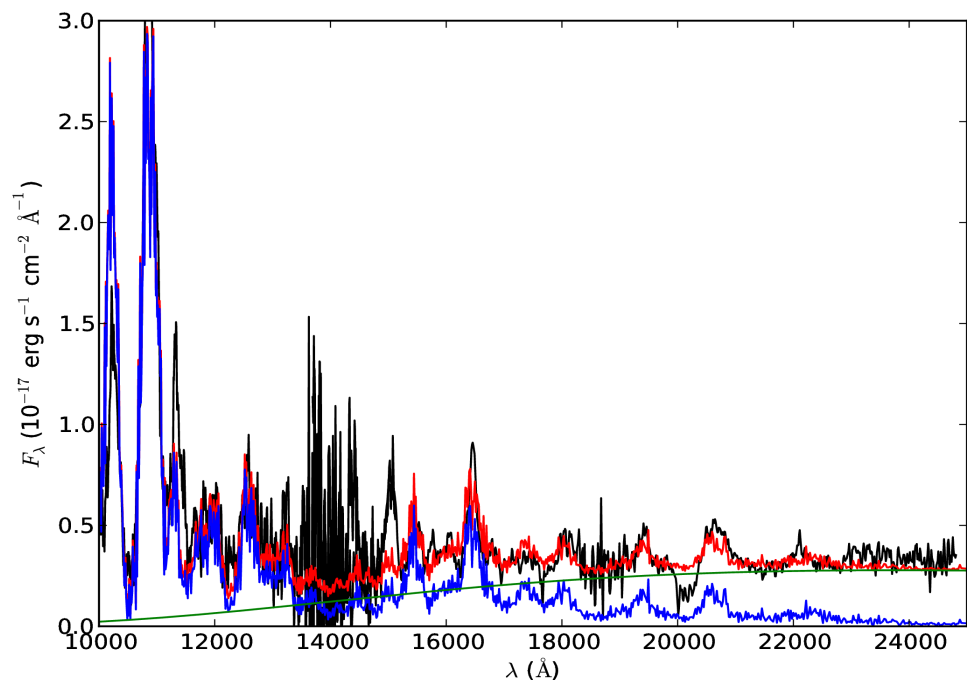$Bolometric\ lightcurve : M_{ZAMS} \sim 13\ M_{\odot}$

$[O\ I]6300,6364\ \text{\AA}\ luminosity : M_{ZAMS} \sim 12\ M_{\odot}$

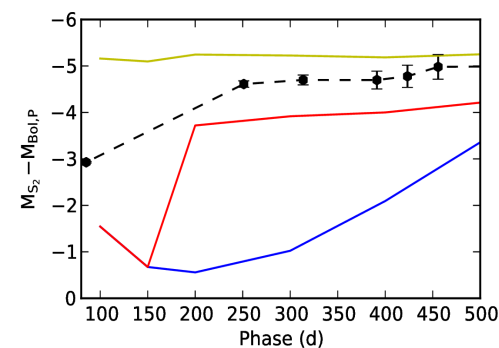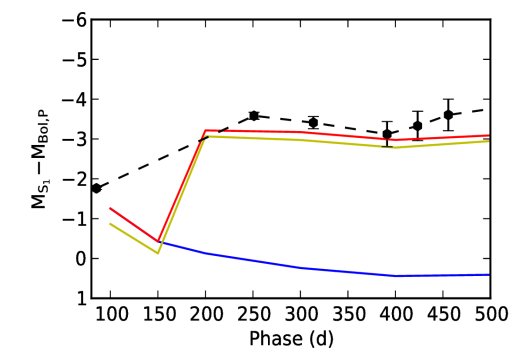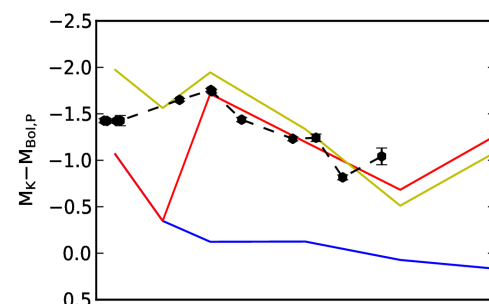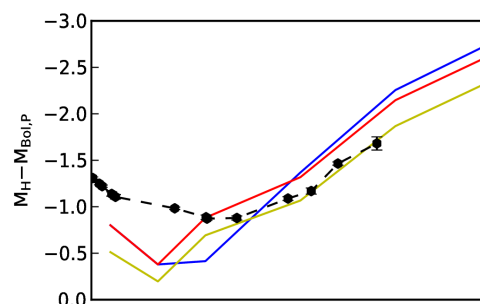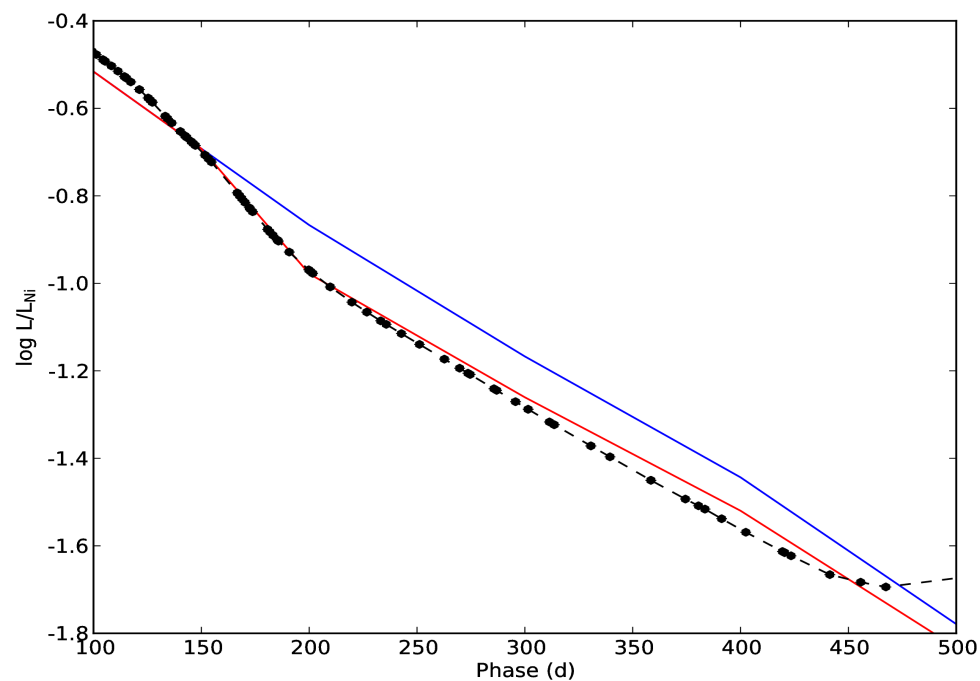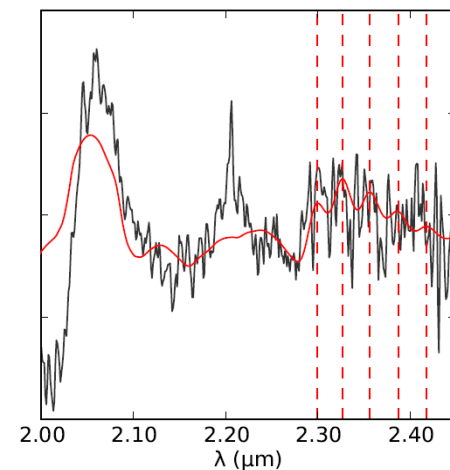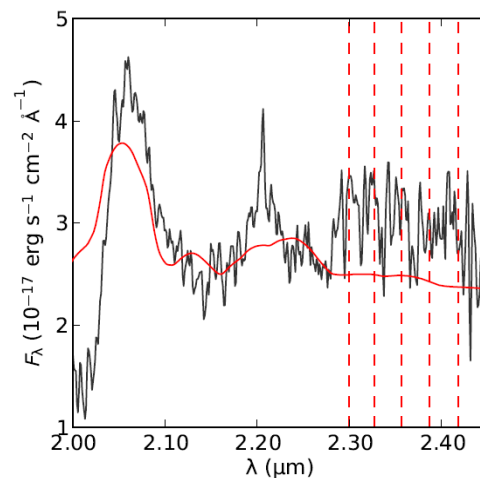## Hydrodynamical model grid (Ergon et al. 2014b)
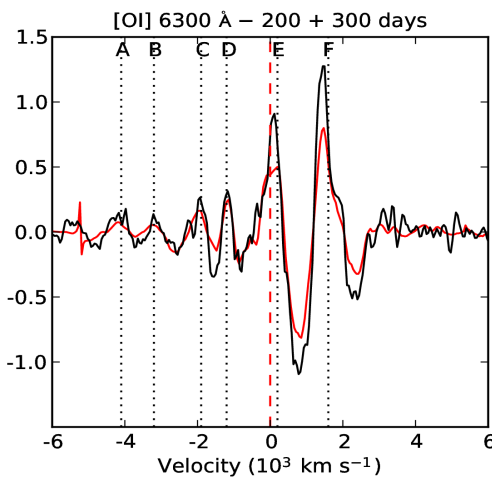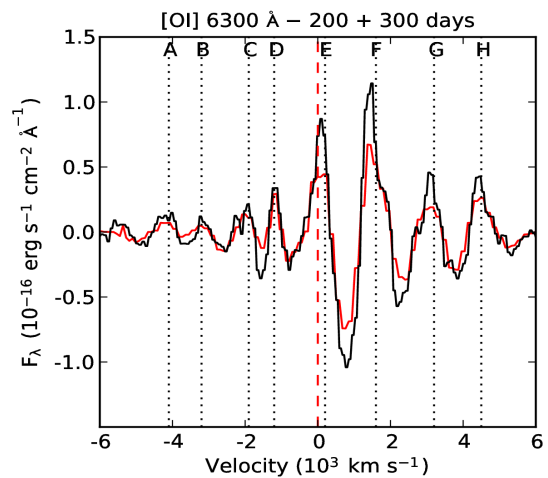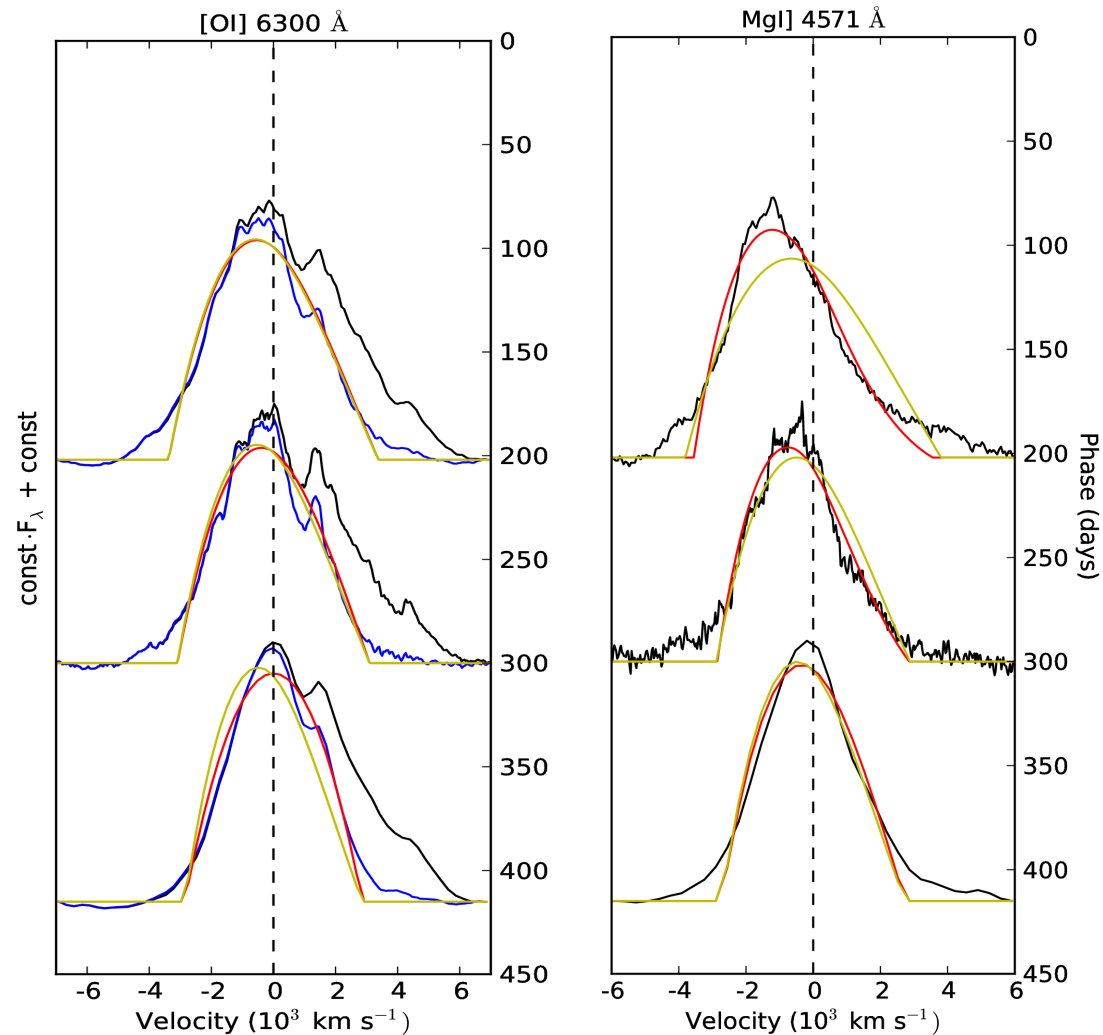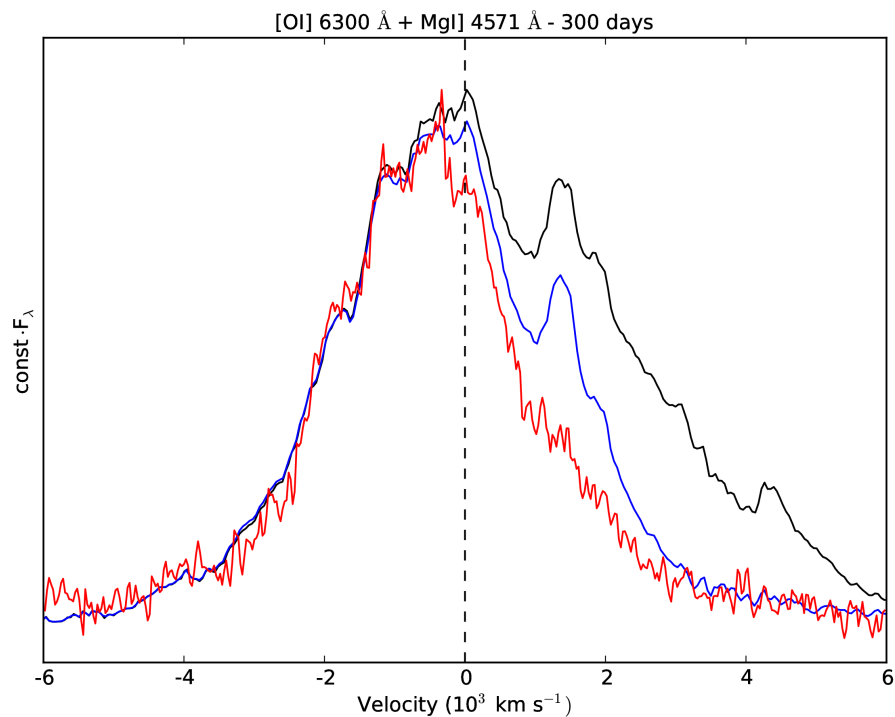
SN 2011dh: Dust, molecules and the MIR

(Ergon et al. 2014b, models from Jerkstrand et al. 2014)

SN 2011dh: [OI] 6300 Å and MgI] 4571 Å line profiles

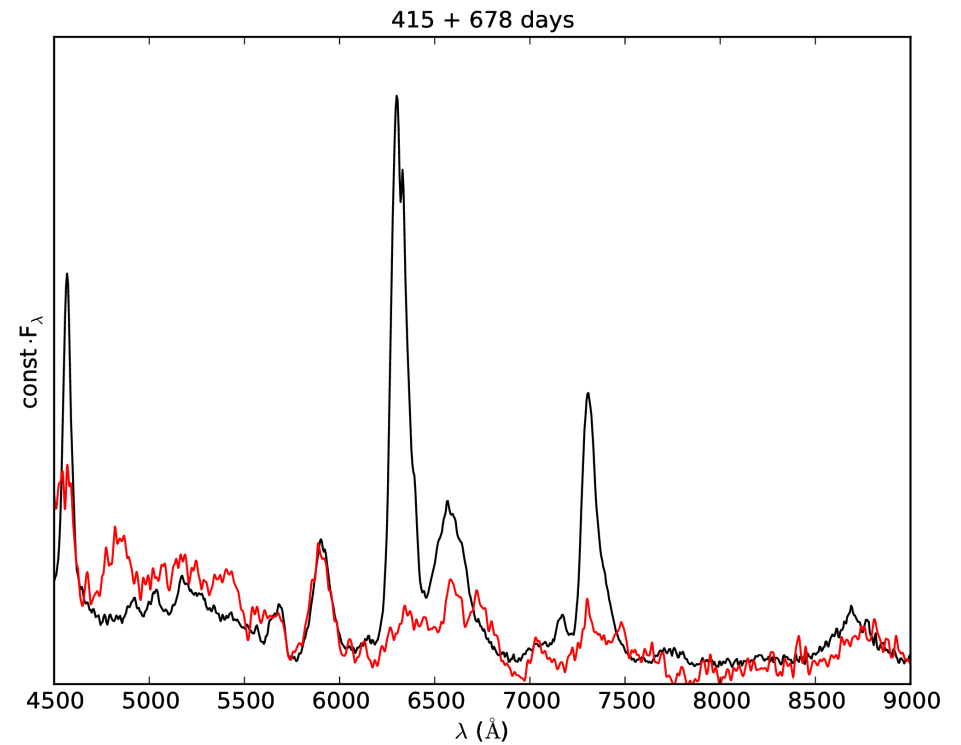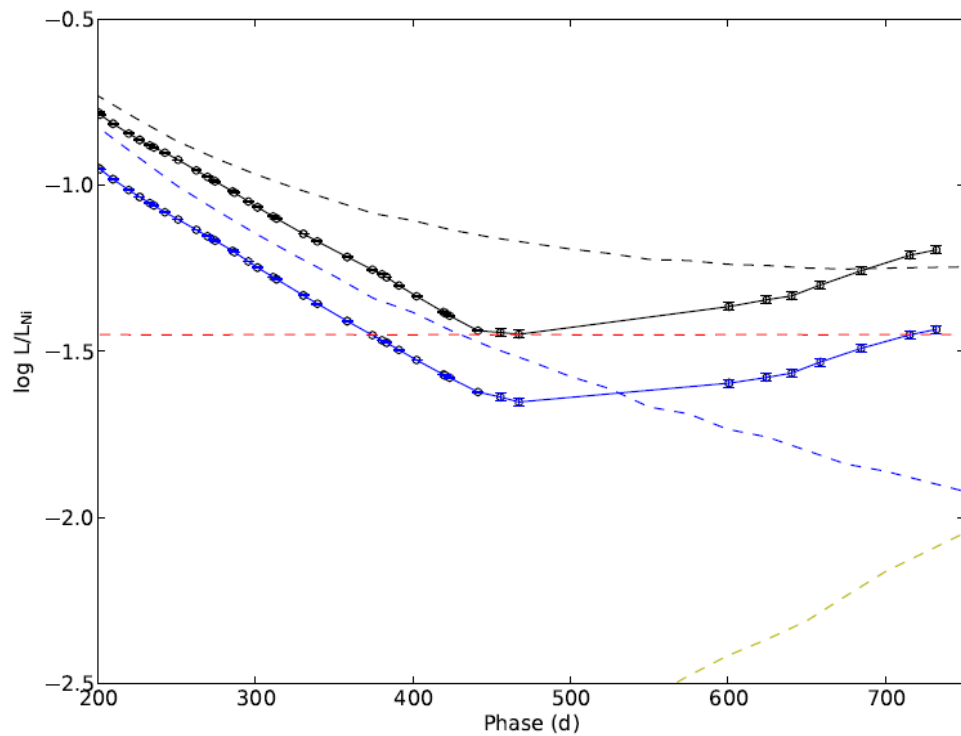(Ergon et al. 2014b, Jerkstrand et al. 2014)
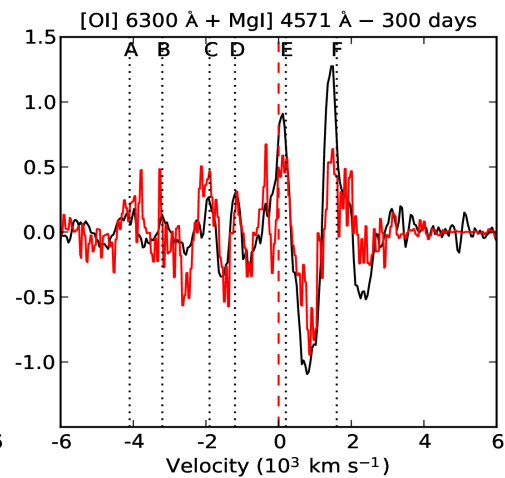
SN2011dh: Very late time evolution

(Ergon et al. 2014b, Shivvers et al. 2013)

NLTE modeling (Kozma & Fransson 1992, 1998a,b) : Timedependent effects important after 600 days.

Positron contribution dominates radioactive energy deposition after ~450 days
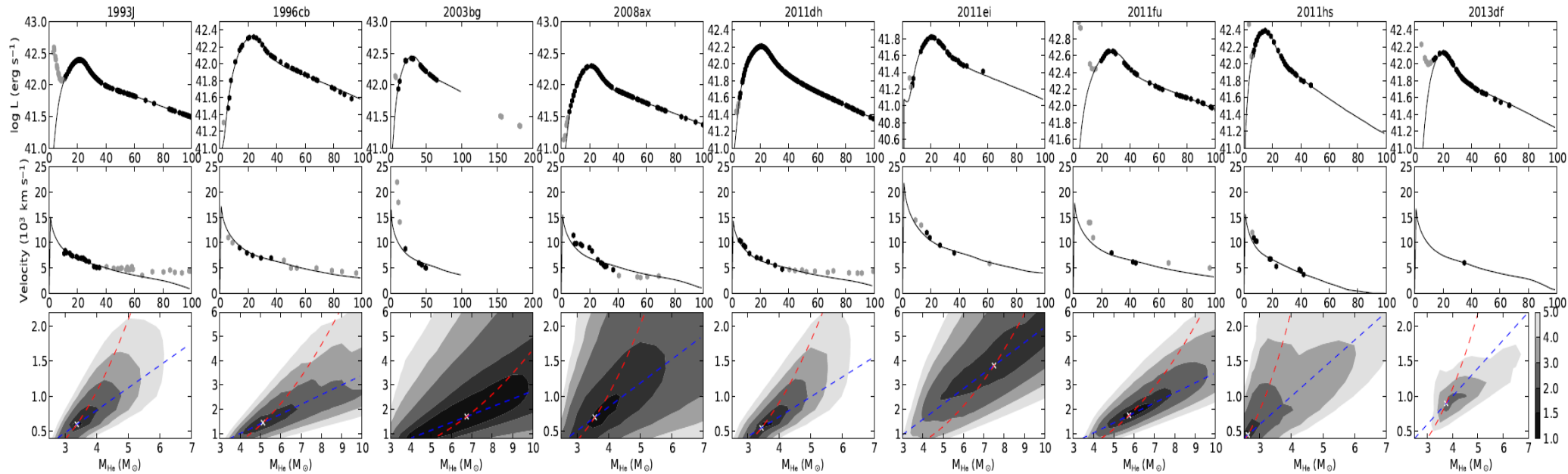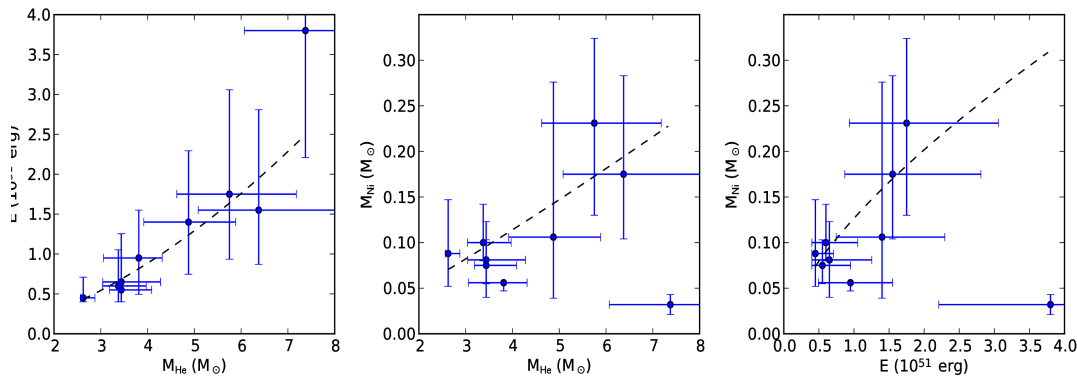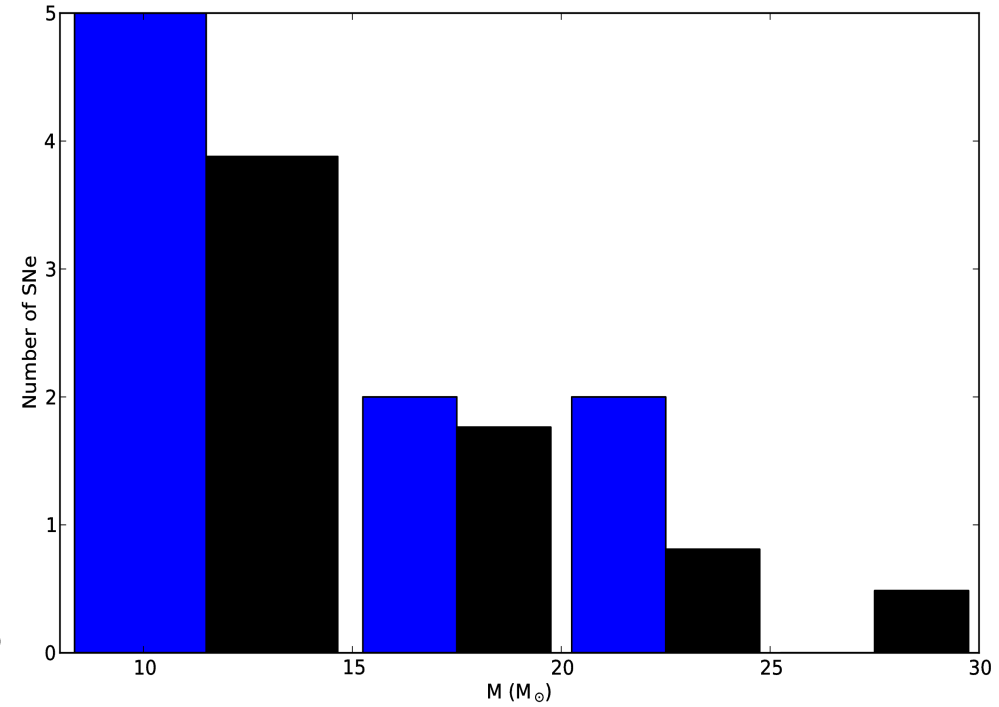
Progenitor and SN parameters for Type IIb SNe

(Ergon et al. 2014c)

$M_{ZAMS} < 15\,M_{\odot} : 56\,\%$

$M_{ZAMS} < 20\,M_{\odot} : 78\,\%$

Progenitor and SN parameters for Type IIb SNe

(Ergon et al. 2014c)

$M_{ZAMS} < 15 \, M_\odot : 50\,\%$

$M_{ZAMS} < 20 \, M_\odot : 88\,\%$