shp-60p-red: absolute difference surface flux 3C – NH–atlantic surface flux of SO2 – NH–atlantic surface concentration surface concentration of SO4 – NH–atlantic surface concentration of SO2 – NH-atlantic 1.2e-20 -1.5e-11 emibc $(kg m^{-2} s^{-1})$ nmrbc (kg kg-1) $\frac{kq-1}{}$ emiso2 (kg m $^{-2}$ s $^{-1}$ 5.3e-2° (kg kg - 1)-2 0e-11 ķď 302 -8.1e-2 -3.0e-1 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 Year Year Year Year Year upwelling longwave flux at TOA – NH–atlantic upwelling shortwave flux at TOA – NH–atlantic net radiative flux at TOA – NH–atlantic incident shortwave flux at TOA – NH–atlantic upwelling clear–sky longwa flux at TOA – NH–atlanti 0e+00 3e-01 5.0e-02 $rsut (W m^{-2})$ rlutcs (W m-2) rlut (Wm-2)2e-01 rsut (W m-2) sdt (Wm-2)-2e-01 2.5e-02 1e-01 -2e-01 0.00+00 0e+00 -3e-0° -1e-01 -2.5e-02 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 Year Year Year Year Year upwelling clear-sky shortway flux at TOA - NH-atlantic clear-sky net radiative implied cloud response dry deposition rate of BC – NH-atlantic wet deposition rate of BC – NH-atlantic rsutcs (W m^{-2}) flux at TOA – NH–atlantic at TOA – NH–atlantic 0e+00 3 9e-15 rlutcs + rsutcs (W m^{-2}) 0e+00 vetbc (kg m^{-2} s⁻¹) rsutcs (W m-2) 2.8e-15 6.3e-16 drybc (kg m⁻² s⁻ -5e-02 -1e-01 rlutcs -1.8e-15 -2e-01 _1e_01 6.8e-16 rsut-2000 2001 2002 2003 2004 2002 2003 2004 2002 2003 2004 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2000 2001 2000 2001 Year Year Year Year Year total deposition rate of BC - NH-atlantic dry deposition rate of SO2 – NH-atlantic wet deposition rate of SO2 – NH-atlantic dry deposition rate of SO4 – NH-atlantic wet deposition rate of SO4 – NH-atlantic 3 4e-15 $drybc + wetbc (kg m^{-2} s^{-1})$ $dryso2 (kg m^{-2} s^{-1})$ wetso2 (kg m⁻² s⁻¹. wetso4 (kg m $^{-2}$ s $^{-1}$ 2.1e-15 2e-02 8.4e-16 dryso4 (kg -4.3e-16 0e+002000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year dyso2 + wetso2)/2 + (dyso4 + wetso4)/3Ice water path – NH-atlantDimethyl sulphide (DMS) mole fraction total deposition rate of S – NH–atlantic cloud cover ambient aerosol optical thickness at 550nm – NH-atl percentage - NH-atlantic 1.2e-03 expression cltc (%) -2.0e-03 clivi (kg m⁻²) mo 2e-02 $(kg m^{-2} s^{-1})$ 1.0e-02 mo 4.0e-04 -3.0e-03 0e+00 5.0e-03 -3.5e-03 0.0e+00 -2e-02 0.0e + 0.020002001200220032004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 Year Year Year Year Year SO2 lifetime SO4 lifetime load load load of so2 - NH-atlantic NH-atlantic of so4 - NH-atlantic of bc - NH-atlantic - NH-atlantic wetso4) (days 1e-09 loadso2/emiso2 (days) loadso4 (kg m⁻²) -1.0e-07 oadso2 (kg m⁻²) oadbc (kg m⁻²) -1.5e-07 oadso4/(dryso4+ 0e+00 -2.0e-07 -2.5e-07 -1e-07 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2000 2001 2002 2003 2004 2001 2002 2004 2000 2001 2002 2003 Year Year Year Year Year NorESM2 CAM-ATRAS F3SM GFDI -FSM4

CESM1

GEOS

GISS modelE