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program analysis
c +-----+
c + A numerical lab for data analysis (Xiang-Yu Huang, 980801)
c +
c + 1. namelist +
c + 1.1 definition
c +
c + 1.2 default values
c +
c + 1.3 read values
c +
c + 2. analysis
c +
c + 2.1 VAR : VARIational analysis
c +
c + 2.2 VAN : Variational Analysis with No inberision of B
c +
c + 2.3 VAF : Variational Analysis using a Filter
c +
c + 2.4 OI : Optimum interpolation (BLUE with default parameters)
c +
c + 2.5 PSAS: Physical-space Statistical Analysis System
c +-----+
c
c 1. namelist
c 1.1 definition
integer mobs,npar,idim,jdim,nmax,nmin
parameter (npar=2)
integer ischeme
integer maxiter(npar),igcut,jgcut
real alpha(npar)
integer nbox,iy,im,id,ih
real latm,lonm,dlat,dlon,rmax
real gscale(npar),sdevfg(npar),sdevob(npar)
real toleral(npar),tolera2(npar)
character exper*3
logical lfgs,lref
logical lwin
logical lplot
namelist /params/ischeme,maxiter,alpha,
+ mobs,idim,jdim,nmax,nmin,
+ nbox,iy,im,id,ih,
+ igcut,jgcut,lwin,
+ latm,lonm,dlat,dlon,
+ gscale,rmax,sdevfg,sdevob,toleral,tolera2,
+ exper,lfgs,lref,lplot
c 1.1 default values
data ischeme/1/ ! ischeme 1-VAR 2-VAN 3-VAF 4-OI 5-PSAS
data exper/'E01'/ ! experiment name
data iy,im,id,ih/1992,3,3,3/ ! time
data mobs/1100/ ! maximum observations
data idim,jdim/21,21/ ! analysis grid dimensions
data gscale/2*200000./ ! covariance scale
data rmax /4500000./ ! dat selection radius
data sdevfg/1.,1./ ! standard dev of fgs
data sdevob/1.,1./ ! standard dev of obs
data lunobs/16/ ! obs file unit
data lunfgs/17/ ! fgs file unit
data lunana/18/ ! ana file unit
data lunref/19/ ! ref file unit
data latm,lonm/56.5,14./ ! grid center coordinate
data dlat,dlon/0.3,0.6/ ! grid resolution
data clat/111111.1111/ ! r sin(pi)
data lfgs /.true./ ! read in firstguess
data lref /.false./ ! read in firstguess
c VAR,VAN,VAF,PSAS
data alpha/0.01,0.01/ ! mini step size
data maxiter/10,10/ ! max iter number
c VAF
data lwin /.true./ ! use the Lanczos window
data igcut,jgcut/4,4/ ! filter span (*2=filter order)
c OI
data nbox/1/ ! OI boxes
data nmax,nmin/1100,10/ ! max and min obs in each OI box
data toleral/100.,100./ ! error bars for the GROSS check
data tolera2/100.,100./ ! error bars for the OI check
c 1.3 read new values
open(11,file='params.dat',status='old')
read(11,params)
close(11)
c 2. analysis
c 2.1 VAR : VARIational analysis
if(ischeme.eq.1)
1 call var(mobs,npar,iy,im,id,ih,exper,
2 idim,jdim,gscale,rmax,sdevfg,sdevob,
3 lunobs,lunfgs,lunana,lunref,
4 latm,lonm,dlat,dlon,clat,
5 lfgs,lref,maxiter,alpha)
c 2.2 VAN : Variational Analysis with No inberision of B
if(ischeme.eq.2)
1 call van(mobs,npar,iy,im,id,ih,exper,
2 idim,jdim,gscale,rmax,sdevfg,sdevob,
3 lunobs,lunfgs,lunana,lunref,
4 latm,lonm,dlat,dlon,clat,
5 lfgs,lref,maxiter,alpha)
c 2.3 VAF : Variational Analysis using a Filter

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if(ischeme.eq.3)
1 call vaf(mobs,npar,iy,im,id,ih,exper,
2 idim,jdim,gscale,rmax,sdevfg,sdevob,
3 lunobs,lunfgs,lunana,lunref,
4 latm,lonm,dlat,dlon,clat,
5 lfgs,lref,maxiter,alpha,
6 igcut,jgcut,lwin)
c 2.4 OI : Optimum interpolation (BLUE with default parameters)
if(ischeme.eq.4)
1 call oi(mobs,nbox,nmax,nmin,npar,iy,im,id,ih,exper,
2 idim,jdim,gscale,rmax,sdevfg,sdevob,
3 toleral,tolera2,
4 lunobs,lunfgs,lunana,
5 latm,lonm,dlat,dlon,clat,lfgs)
c 2.5 PSAS: Physical-space Statistical Analysis System
if(ischeme.eq.5)
1 call psas(mobs,npar,iy,im,id,ih,exper,
2 idim,jdim,gscale,rmax,sdevfg,sdevob,
3 lunobs,lunfgs,lunana,lunref,
4 latm,lonm,dlat,dlon,clat,
5 lfgs,lref,maxiter,alpha)
if(lplot) call system('./map')
end

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