ORKUSTOFNUN

Samanburður á HBV-líkönum í Sandá í Þistilfirði, vhm 26, með tvenns konar veðurgögnum

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Greinargerð JSTH-JFJ-2003-01

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Inngangur

Í þessari greinargerð verða bornar saman niðurstöður HBV-líkana af Sandá í Þistilfirði, vhm 26, sem gerð voru með tveimur mismunandi veðurgögnum. Annars vegar er um að ræða líkan sem Gunnar Orri Gröndal (2002) [GOG] gerði með venjulegum veðurgögnum, þ.e. sólarhringsúrkomu og –meðalhita í nágrenni vatnasviðsins, og hins vegar samanburðarlíkan sem styðst við veðurgögn frá MM5-líkani (Ólafur Rögnvaldsson 2002). Við gerð samanburðarlíkansins var tekin stuðlaskrá frá líkani Gunnars Orra og hún löguð að nýju veðurgögnunum. Samanburðarlíkanið var aðlagað tímabilinu 1. september 1990 til 31. ágúst 1996, með tímabilið 1. september 1996 til 31. ágúst 2002 til hliðsjónar.

Rennslislykillinn sem notaður var til að reikna rennslið í líkani Gunnars Orra er úreltur og rennslisröðin því ekki rétt samkvæmt gagnabanka Vatnamælinga Orkustofnuar, en við samanburð þessara tveggja líkana var engu að síður notast við rennsli samkvæmt þessum lykli til að réttur samanburður fengist. Hins vegar var ný rennslisröð búin til samkvæmt gildandi lykli og hún notuð til að keyra þriðja líkanið með MM5-veðurgögnunum til að sjá hvernig niðurstöður þau gefa. Í viðaukum er að finna stuðlaskrárnar fyrir hvert líkan, línurit með niðurstöðum líkananna og langæislínur mælds og reiknaðs rennslis fyrir hvert líkan.

Aðlögun rennslislíkans MM5-veðurgögnum

Í samanburðarlíkaninu var tekin stuðlaskráin frá líkani Gunnars Orra og hún aðlöguð nýju veðurgögnunum. Í fyrstu atrennu var margföldunarstuðlunum, sem leiðrétta mælingar á úrkomu (PKORR) og snjó (SKORR), gefið gildið einn þar sem ekki ætti að þurfa að leiðrétta úrkomuna úr MM5-líkaninu. Úrkomustigli (PGRAD) var gefið gildið 0, og hitastiglarnir fyrir daga án úrkomu (TTGRAD), daga með úrkomu (TVGRAD) og breytingar á hitastigli milli mánaða (TGRAD) voru reiknuð út frá veðurgögnunum.

Úrkomustigli (PGRAD) var gefið gildið 0 til að heildarúrkoman á vatnasviðinu yrði sú sama og MM5-líkanið segir til um. Ekki reyndist mögulegt að nota úrkomustigull reiknaðan út frá veðurgögnunum þar sem líkanið reiknaði heildarúrkomuna ekki rétt með því móti. Ekki er ljóst hvernig HBV-líkanið nýtir upplýsingar um úrkomustigul, þ.e. hvort líkanið reikni úrkomu fyrir hvert hæðarbil og haldi utan um vatnsjöfnuð hvers hæðarbils eða hvort líkanið noti úrkomustigulinn aðeins til að reikna heildarúrkomu á vatnasviðinu.

Vatnsjöfnuður reyndist ekki hárréttur samkvæmt veðurgögnunum frá MM5-líkaninu og var margföldunarstuðullinn fyrir úrkomu (PKORR) því notaður til að stilla

vatnsjöfnuðinn af. Stuðlar sem lýsa snjóhluta líkansins voru stilltir af til að ná sem bestri fylgni milli mælds og reiknaðs rennslis. Öðrum stuðlum var ekki breytt í líkaninu.

Líkönin voru stillt af með rennslisgögnum frá vatnsárunum 1990-1995.

Niðurstöður

Þegar líkönin höfðu verið stillt af með tilliti til vatnsáranna 1990-1995 voru niðurstöður þeirra bornar saman við líkan Gunnars Orra, bæði fyrir tímabilið sem þau voru stillt inn á og einnig fyrir vatnsárin 1996-2001. Fylgnistuðla og yfirlit yfir vatnsjöfnuð allra þriggja líkananna er að finna í eftirfarandi töflum.

Í samanburðarlíkaninu var úrkoma frá MM5-líkaninu aukin um 1% til þess að vatnsjöfnuður vatnsáranna 1990-1995 yrði sem réttastur.

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1990/91	13,80	13,70	-0,007	13,40
1991/92	12,80	13,00	0,010	12,70
1992/93	16,80	15,70	-0,062	13,20
1993/94	18,30	16,30	-0,111	12,00
1994/95	18,30	19,40	0,057	15,00
1995/96	10,50	12,10	0,153	11,70
Meðal	14,60	14,60	0,005	13,00

Tafla 1: Yfirlit yfir vatnsjöfnuð í samanburðarlíkani, vatnsárin 1990-1995

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1996/97	15,40	15,20	-0,011	11,40
1997/98	14,20	12,50	-0,121	11,80
1998/99	20,30	17,40	-0,140	14,60
1999/00	16,20	12,80	-0,210	10,20
2000/01	15,20	13,00	-0,143	11,90
2001/02	16,20	12,10	-0,251	11,80
Meðal	16,20	13,70	-0,155	11,90

Tafla 2: Yfirlit yfir vatnsjöfnuð í samanburðarlíkani, vatnsárin 1996-2001

Vatnasvið	vhm	Tímabil (vatnsár)	R2	R2log	Vatnsjöfnuður
Sandá	26	1990/91-1995/96	0,49	0,56	0,5%
Sandá	26	1996/97-2001/02	0,51	0,39	-15,5%

Tafla 3: Niðurstöður HBV-samanburðarlíkansins

Eins og sést hér að ofan er vatnsjöfnuðurinn í samanburðarlíkaninu fyrir vatnsárin 1996-2001 ekki góður. Það getur stafað af því að nýr rennslislykill tók gildi 1. janúar 1997 og ef til vill er ekki nógu gott samræmi milli rennslislyklanna fyrir og eftir þann tímapunkt. Þetta líkan er stillt eftir sömu rennslisgögnum og Gunnar Orri gerði forðum og þau gögn (fram til 1.1.1997) eru samkvæmt lykli sem nú er ógildur; þetta gæti skýrt hluta af þessu ósamræmi.

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1990/91	13,70	13,50	-0,020	13,20
1991/92	12,80	13,50	0,051	13,10
1992/93	16,80	17,80	0,060	14,80
1993/94	18,30	14,40	-0,216	11,00
1994/95	18,30	20,80	0,136	15,80
1995/96	10,50	8,54	-0,186	8,50
meðal	14,60	14,30	-0,019	12,70

Tafla 4: Yfirlit yfir vatnsjöfnuð í líkani GOG, vatnsárin 1990-1995

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1996/97	15,40	15,30	-0,004	11,60
1997/98	14,20	13,80	-0,031	13,00
1998/99	20,30	16,20	-0,203	13,40
1999/00	16,20	17,30	0,071	13,50
2000/01	15,20	12,00	-0,206	11,30
2001/02	16,20	13,70	-0,151	13,30
meðal	16,20	14,50	-0,106	12,70

Tafla 5: Yfirlit yfir vatnsjöfnuð í líkani GOG, vatnsárin 1996-2001

Vatnasvið	vhm	Tímabil (vatnsár)	R2	R2log	Vatnsjöfnuður
Sandá	26	1990/91-1995/96	0,63	0,63	-1,9%
Sandá	26	1996/97-2001/02	0,62	0,52	-10,9%

Tafla 6: Niðurstöður HBV-líkans GOG

Eftirfarandi töflur sýna niðurstöður þriðja líkansins. Í þessu líkani er ný rennslisröð notuð samkvæmt núgildandi lykli og niðurstöðunum ætlað til að varpa ljósi á hve vel

MM5-veðurgögnin falla að HBV-líkaninu fyrir Sandá. Stuðlaskráin var fengin frá líkani GOG og stuðlum breytt til að bæta líkanið. Notaðir voru sömu hitastiglar, TGRAD, TTGRAD og TVGRAD, og í samanburðarlíkaninu. Úrkoma var aukin um 5% svo að vatnsjöfnuðurinn yrði sem réttastur á vatnsárunum 1990-1995.

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1990/91	14,50	14,40	-0,008	14,00
1991/92	13,50	13,80	0,018	13,40
1992/93	17,50	16,20	-0,071	13,80
1993/94	18,90	16,50	-0,129	12,40
1994/95	19,10	20,20	0,058	15,60
1995/96	11,20	12,80	0,135	12,30
meðal	15,30	15,30	0,000	13,60

Tafla 7: Yfirlit yfir vatnsjöfnuð , vatnsárin 1990-1995

Vatnsár	Mælt [m^3/s]	Reiknað [m^3/s]	Hlutfallsl. mismunur	Reiknað rennsli [m^3/s] fyrir allt Vatnsárið
1996/97	15,60	15,80	0,014	11,90
1997/98	14,20	13,20	-0,069	12,40
1998/99	20,30	18,00	-0,112	15,20
1999/00	16,10	13,40	-0,170	10,70
2000/01	15,20	13,70	-0,094	12,40
2001/02	15,60	12,80	-0,181	12,40
meðal	16,10	14,40	-0,107	12,40

Tafla 8: Yfirlit yfir vatnsjöfnuð, vatnsárin 1996-2001

Vatnasvið	vhm	Tímabil (vatnsár)	R2	R2log	Vatnsjöfnuður
Sandá	26	1990/91-1995/96	0,49	0,57	0,0%
Sandá	26	1996/97-2001/02	0,54	0,44	-10,7%

Tafla 9: Niðurstöður HBV-líkansins

Samantekt

Í þessari greinargerð eru bornar saman niðurstöður HBV-líkans sem er annars vegar keyrt með gögnum úr nágrenni vatnasviðsins og hins vegar með gögnum frá MM5-líkankeyrslum.

Samkvæmt upplýsingum um vatnsjöfnuð tekst MM5-líkaninu vel að líkja eftir heildarmagni úrkomu á vatnasviðinu. Samkvæmt rennslisgögnum sem eru fengin út

frá þeim rennslislyklum sem í gildi eru, munar 5% á þeirri úrkomu sem fellur og þeirri úrkomu sem þarf til þess að vatnsjöfnuðurinn haldist réttur. Hluti þessa mismunar getur verið vegna óvissu í rennslislyklum, en hún er nokkur við vatnshæðarmælinn.

Vatnsjöfnuður vatnsáranna 1996-2001 er ekki góður fyrr neitt hinna þriggja líkana en nýr rennslislykill tók gildi 1.1.1997 og möguleiki er að samræmi milli rennslislyklanna fyrir og eftir þann tímapunkt sé ekki nógu gott. Annar möguleiki er að veðurhættir á síðara tímabilinu hafi verið ólíkir þeim sem ríktu á fyrra tímabilinu og að HBV-líkaninu takist ekki að líkja eftir áhrifum þeirra.

Fylgnistuðlar milli mælds og reiknaðs rennslis, þar sem notuð eru úrkoma og hiti frá MM5-líkaninu, eru ágætir, en þó ekki jafngóðir og í líkaninu sem byggir á veðurþáttum mældum á nálægum veðurstöðvum. Hafa ber í huga að færri stuðlum var breytt í því tilfelli þar sem MM5-gögnin voru notuð. MM5-gögnin voru notuð til að ákvarða hitastigul og úrkomunni var jafndreift yfir vatnasviðið í stað þess að dreifa henni með úrkomustigli. Ef til vill hefði verið hægt að fá betri fylgnistuðla með því að leyfa breytingar á hitastigli eða öðrum þáttum en þeim sem sem lýsa snjóhluta líkansins.

Heimildir

Gunnar Orri Gröndal. 2002. *Sandá í Þistilfirði : gerð HBV-rennslislíkans af vhm 026* Orkustofnun, Vatnamælingar **OS-2002/036.**

Ólafur Rögnvaldsson, Haraldur Ólafsson. 2002. *Downscaling experiments with the MM5 model : determining an optimal configuration for climatological downscaling studies of precipitation in Iceland.*

Viðauki II
Stuðlaskrár

Stuðlaskrá samanburðarlíkans (skrá: /vm/hbv/jsth/MM5/vhm26/param.12.nov.dat)

```
START  2V026
  2    0           13    PNO       Number of precipitation stations
  2    0  81-59          PID1      Identification for precip station 1
  2    0        571.5    PHOH1     Altitude precip station 1
  2    0         .0749   PWGT1     Weight precipitation station 1
  2    0  81-60          PID2
  2    0         511.    PHOH2
  2    0         .1649   PWGT2
  2    0  81-61          PID3
  2    0         420.2   PHOH3
  2    0         .1747   PWGT3
  2    0  81-62          PID1      Identification for precip station 1
  2    0        351.4    PHOH1     Altitude precip station 1
  2    0         .0216   PWGT1     Weight precipitation station 1
  2    0  82-59          PID1      Identification for precip station 1
  2    0        670.7    PHOH1     Altitude precip station 1
  2    0         .0461   PWGT1     Weight precipitation station 1
  2    0  82-60          PID1      Identification for precip station 1
  2    0        562.4    PHOH1     Altitude precip station 1
  2    0         .0375   PWGT1     Weight precipitation station 1
  2    0  82-61          PID1      Identification for precip station 1
  2    0        422.1    PHOH1     Altitude precip station 1
  2    0         .1188   PWGT1     Weight precipitation station 1
  2    0  82-62          PID1      Identification for precip station 1
  2    0        397.8    PHOH1     Altitude precip station 1
  2    0         .1563   PWGT1     Weight precipitation station 1
  2    0  82-63          PID1      Identification for precip station 1
  2    0        215.9    PHOH1     Altitude precip station 1
  2    0         .1066   PWGT1     Weight precipitation station 1
  2    0  82-64          PID1      Identification for precip station 1
  2    0        139.5    PHOH1     Altitude precip station 1
  2    0         .0062   PWGT1     Weight precipitation station 1
  2    0  83-63          PID1      Identification for precip station 1
  2    0        165.6    PHOH1     Altitude precip station 1
  2    0         .0113   PWGT1     Weight precipitation station 1
  2    0  83-64          PID1      Identification for precip station 1
  2    0         56.6    PHOH1     Altitude precip station 1
  2    0         .0799   PWGT1     Weight precipitation station 1
  2    0  83-65          PID1      Identification for precip station 1
  2    0         10.7    PHOH1     Altitude precip station 1
  2    0         .0012   PWGT1     Weight precipitation station 1
  2    0            4    TNO       Number of temperature stations
  2    0  81-59          TID1      Identification for temp station 1
  2    0        571.5    THOH1     Altitude temp station 1
  2    0         .203    TWGT1     Weight temp station 1
  2    0  81-61          TID2
  2    0         420.2   THOH2
  2    0         .384    TWGT2
  2    0  82_62          TID3
  2    0         307.8   THOH3
  2    0         .282    TWGT3
  2    0  83_64          TID3
  2    0          56.6   THOH3
  2    0         .131    TWGT3
  2    0            1    QNO       Number of discharge stations
  2    0  vhm026         QID       Identification for discharge station
  2    0          1.     QWGT      Scaling factor for discharge
  2    0       269.67    AREAL     Catchment area                        [km2]
  2    4        0.000    MAGDEL    Regulation reservoirs                 [1]
  2    5       10.000    HYPSO ( 1,1), low point              [m]
  2    6      150.000    HYPSO ( 2,1)
  2    7      250.000    HYPSO ( 3,1)
  2    8      300.000    HYPSO ( 4,1)
  2    9      400.000    HYPSO ( 5,1)
  2   10      450.000    HYPSO ( 6,1)
  2   11      550.000    HYPSO ( 7,1)
  2   12      600.000    HYPSO ( 8,1)
  2   13      700.000    HYPSO ( 9,1)
  2   14      750.000    HYPSO (10,1)
  2   15      950.000    HYPSO (11,1), high point
  2   16        0.000    HYPSO ( 1,2), Part of total area below HYPSO (1,1) = 0
  2   17        0.087    HYPSO ( 2,2)
  2   18        0.189    HYPSO ( 3,2)
  2   19        0.267    HYPSO ( 4,2)
  2   20        0.550    HYPSO ( 5,2)
  2   21        0.618    HYPSO ( 6,2)
  2   22        0.801    HYPSO ( 7,2)
  2   23        0.874    HYPSO ( 8,2)
  2   24        0.950    HYPSO ( 9,2)
  2   25        0.974    HYPSO (10,2)
  2   26        1.000    HYPSO (11,2), Part of total area below HYPSO (11,1) = 1
  2   27        0.000    BREPRO( 1), Glacier area, part of total area, below HYPSO( 1,1) (=0.0)
```

```
2   28        0.000
2   29        0.000
2   30        0.000
2   31        0.000
2   32        0.000
2   33        0.000
2   34        0.000
2   35        0.000
2   36        0.000
2   37        0.000    BREPRO(11), Glacier area, part of total area, below HYPSO(11,1)
2   38
2   39      240.00     NDAG      Day no for conversion of glacier snow to ice
2   40       -0.30     TX        Threshold temperature for snow/ice            [C]
2   41       -1.00     TS        Threshold temperature fo no melt              [C]
2   42        5.20     CX        Melt index                              [mm/deg/day]
2   43        0.05     CFR       Refreeze efficiency                           [1]
2   44        0.03     LV        Max rel. water content in snow                [1]
2   45        1.01     PKORR     Precipitaion correction for rain              [1]
2   46        1.00     SKORR     Additional precipitation corection for snow at gauge [1]
2   47      207.00     GRADALT   Altitude for change in prec. grad.            [m]
2   48        0.00     PGRAD1    Precipitation gradient above GRADALT          [1]
2   49        0.03     CALB      Ageing factor for albedo                 [1/day]
2   50        0.30     CRAD      Radiation melt component                      [1]
2   51        0.70     CONV      Convection melt component                     [1]
2   52        0.00     COND      Condensation melt component                   [1]
2   60        1.00     CEVPL     lake evapotranspiration adjustment fact       [1]
2   61        0.90     ERED      evapotranspiration red. during interception   [1]
2   62        30.0     ICEDAY    Lake temperature time constant                [d]
2   63       -0.67     TTGRAD    Temperature gradient for days without precip [deg/100 m]
2   64       -0.66     TVGRAD    Temperature gradient for days with precip    [deg/100 m]
2   65        0.00     PGRAD     Precipitation altitude gradient              [1/100 m]
2   66        1.30     CBRE      Melt increase on glacier ice                  [1]
2   67        0.500    EP        EP( 1), Pot evapotranspiration, Jan    [mm/day] or [1]
2   68        0.500    EP        EP( 2), Pot evapotranspiration, Feb    [mm/day] or [1]
2   69        0.800    EP        EP( 3)
2   70        1.100    EP        EP( 4)
2   71        1.400    EP        EP( 5)
2   72        2.500    EP        EP( 6)
2   73        2.400    EP        EP( 7)
2   74        1.200    EP        EP( 8)
2   75        1.100    EP        EP( 9)
2   76        0.900    EP        EP(10)
2   77        0.700    EP        EP(11)
2   78        0.600    EP        EP(12)), Pot evapotranspiration, Dec    [mm/day] or [1]
2   79      250.00     FC        Maximum soil water content           [mm]
2   80        0.10     FCDEL     Pot.evapotr when content = FC*FCDEL  [1]
2   81        2.5      BETA      Non-linearity in soil water zone     [1]
2   82       10.00     INFMAX    maximum infiltration capacity        [mm/day]
2   83
2   84
2   85        0.38     KUZ2      Quick time constant upper zone       [1/day]
2   86       50.00     UZ1       Threshold quick runoff               [mm]
2   87        0.04     KUZ1      Slow time constant upper zone        [1/day]
2   88        5.60     PERC      Percolation to lower zone            [mm/day]
2   89       0.007     KLZ       Time constant lower zone             [1/day]
2   90        0.85     ROUT      (1), Routing constant (lake area, km2)
2   91        0.05     ROUT      (2), Routing constant (rating curve const)
2   92        0.05     ROUT      (3), Routing constant (rating curve zero)
2   93        0.025    ROUT      (4), Routing constant (rating curve exp)
2   94        0.075    ROUT      (5), Routing constant (drained area ratio)
2   95        0.00     DECAY     (1), Feedback constant
2   96        0.00     DECAY     (2), Feedback constant
2   97        0.00     DECAY     (3), Feedback constant
2   98        0.20     CE        Evapotranspiration constant          [mm/deg/day]
2   99        0.2      DRAW      "draw up" constant                   [mm/day]
2  100        65.7     LAT       Latitude                             [deg]
2  101       -0.60     TGRAD(1)  Temperature gradient Jan             [deg/100m]
2  102       -0.63     TGRAD(2)  Temperature gradient Feb             [deg/100m]
2  103       -0.65     TGRAD(3)  Temperature gradient Mar             [deg/100m]
2  104       -0.62     TGRAD(4)  Temperature gradient Apr             [deg/100m]
2  105       -0.72     TGRAD(5)  Temperature gradient May             [deg/100m]
2  106       -1.00     TGRAD(6)  Temperature gradient Jun             [deg/100m]
2  107       -0.79     TGRAD(7)  Temperature gradient Jul             [deg/100m]
2  108       -0.61     TGRAD(8)  Temperature gradient Aug             [deg/100m]
2  109       -0.65     TGRAD(9)  Temperature gradient Sep             [deg/100m]
2  110       -0.61     TGRAD(10) Temperature gradient Oct             [deg/100m]
2  111       -0.59     TGRAD(11) Temperature gradient Nov             [deg/100m]
2  112       -0.62     TGRAD(12) Temperature gradient Dec             [deg/100m]
2  113        10.0     SPDIST    Uniformly distributed snow acc       [mm]
2  114       100.0     SMINI     Inital soil moisture content         [mm]
2  115       100.0     UZINI     Initial upper zone content           [mm]
2  116       350.0     LZINI     Initial lower zone content           [mm]
2  121           3      VEGT(1,1) Vegetation type 1, zone 1
2  122           4      VEGT(2,1) Vegetation type 2, zone 1
2  123         1.0      VEGA(1)   Vegetation 2 area, zone 1            [1]
2  124         0.0      LAKE(1)   Lake area,         zone 1            [1]
2  125           3      VEGT(1,2) Vegetation type 1, zone 2
2  126           4      VEGT(2,2) Vegetation type 2, zone 2
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  2  127          1.0     VEGA(2)   Vegetation 2 area, zone 2            [1]
  2  128          0.0     LAKE(2)   Lake area,         zone 2            [1]
  2  129            4     VEGT(1,3) Vegetation type 1, zone 3
  2  130            4     VEGT(2,3) Vegetation type 2, zone 3
  2  131          0.0     VEGA(3)   Vegetation 2 area, zone 3            [1]
  2  132          0.0     LAKE(3)   Lake area,         zone 3            [1]
  2  133            4     VEGT(1,4) Vegetation type 1, zone 4
  2  134            1     VEGT(2,4) Vegetation type 2, zone 4
  2  135          0.1     VEGA(4)   Vegetation 2 area, zone 4            [1]
  2  136          0.0     LAKE(4)   Lake area,         zone 4            [1]
  2  137            4     VEGT(1,5) Vegetation type 1, zone 5
  2  138            1     VEGT(2,5) Vegetation type 2, zone 5
  2  139          1.0     VEGA(5)   Vegetation 2 area, zone 5            [1]
  2  140          0.0     LAKE(5)   Lake area,         zone 5            [1]
  2  141            4     VEGT(1,6) Vegetation type 1, zone 6
  2  142            1     VEGT(2,6) Vegetation type 2, zone 6
  2  143          0.0     VEGA(6)   Vegetation 2 area, zone 6            [1]
  2  144          0.0     LAKE(6)   Lake area,         zone 6            [1]
  2  145            1     VEGT(1,7) Vegetation type 1, zone 7
  2  146            4     VEGT(2,7) Vegetation type 2, zone 7
  2  147          0.0     VEGA(7)   Vegetation 2 area, zone 7            [1]
  2  148          0.0     LAKE(7)   Lake area,         zone 7            [1]
  2  149            1     VEGT(1,8) Vegetation type 1, zone 8
  2  150            4     VEGT(2,8) Vegetation type 2, zone 8
  2  151          1.0     VEGA(8)   Vegetation 2 area, zone 8            [1]
  2  152          0.0     LAKE(8)   Lake area,         zone 8            [1]
  2  153            1     VEGT(1,9) Vegetation type 1, zone 9
  2  154            4     VEGT(2,9) Vegetation type 2, zone 9
  2  155          1.0     VEGA(9)   Vegetation 2 area, zone 9            [1]
  2  156          0.0     LAKE(9)   Lake area,         zone 9            [1]
  2  157            1     VEGT(1,10) Vegetation type 1, zone 10
  2  158            4     VEGT(2,10) Vegetation type 2, zone 10
  2  159          0.0     VEGA(10)   Vegetation 2 area, zone 10          [1]
  2  160          0.0     LAKE(10)   Lake area,         zone 10          [1]
FINIS
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Stuðlaskrá líkans GOG (skrá: /vm/hbv/jsth/vhm026/param.dat)

```
START  2V026
  2    0           3    PNO       Number of precipitation stations
  2    0  Grímsst Fj    PID1      Identification for precip station 1
  2    0       387.     PHOH1     Altitude precip station 1
  2    0        .38     PWGT1     Weight precipitation station 1
  2    0  Raufarhöfn    PID2
  2    0        5.      PHOH2
  2    0        .22     PWGT2
  2    0  Sauðanes       PID3
  2    0        20.5    PHOH3
  2    0        .40     PWGT3
  2    0           3    TNO       Number of temperature stations
  2    0  Grímsst Fj    TID1      Identification for temp station 1
  2    0       387.     THOH1     Altitude temp station 1
  2    0        .65     TWGT1     Weight temp station 1
  2    0  Raufarhöfn    TID2
  2    0        5.      THOH2
  2    0        .05     TWGT2
  2    0  Sauðanes       TID3
  2    0        20.5    THOH3
  2    0        .30     TWGT3
  2    0           1    QNO       Number of discharge stations
  2    0  vhm026         QID       Identification for discharge station
  2    0         1.     QWGT      Scaling factor for discharge
  2    0      269.67    AREAL     Catchment area                      [km2]
  2    4       0.000    MAGDEL    Regulation reservoirs               [1]
  2    5      10.000    HYPSO ( 1,1), low point              [m]
  2    6     150.000    HYPSO ( 2,1)
  2    7     250.000    HYPSO ( 3,1)
  2    8     300.000    HYPSO ( 4,1)
  2    9     400.000    HYPSO ( 5,1)
  2   10     450.000    HYPSO ( 6,1)
  2   11     550.000    HYPSO ( 7,1)
  2   12     600.000    HYPSO ( 8,1)
  2   13     700.000    HYPSO ( 9,1)
  2   14     750.000    HYPSO (10,1)
  2   15     950.000    HYPSO (11,1), high point
  2   16       0.000    HYPSO ( 1,2), Part of total area below HYPSO (1,1) = 0
  2   17       0.087    HYPSO ( 2,2)
  2   18       0.189    HYPSO ( 3,2)
  2   19       0.267    HYPSO ( 4,2)
  2   20       0.550    HYPSO ( 5,2)
  2   21       0.618    HYPSO ( 6,2)
  2   22       0.801    HYPSO ( 7,2)
  2   23       0.874    HYPSO ( 8,2)
  2   24       0.950    HYPSO ( 9,2)
  2   25       0.974    HYPSO (10,2)
  2   26       1.000    HYPSO (11,2), Part of total area below HYPSO (11,1) = 1
  2   27       0.000    BREPRO( 1), Glacier area, part of total area, below HYPSO( 1,1) (=0.0)
  2   28       0.000
  2   29       0.000
  2   30       0.000
  2   31       0.000
  2   32       0.000
  2   33       0.000
  2   34       0.000
  2   35       0.000
  2   36       0.000
  2   37       0.000    BREPRO(11), Glacier area, part of total area, below HYPSO(11,1)
  2   38
  2   39     240.000    NDAG      Day no for conversion of glacier snow to ice
  2   40      -0.000    TX        Threshold temperature for snow/ice          [C]
  2   41      -0.100    TS        Threshold temperature fo no melt            [C]
  2   42       5.200    CX        Melt index                          [mm/deg/day]
  2   43       0.05     CFR       Refreeze efficiency                         [1]
  2   44       0.03     LV        Max rel. water content in snow              [1]
  2   45       2.00     PKORR     Precipitaion correction for rain            [1]
  2   46       1.550    SKORR     Additional precipitation corection for snow at gauge [1]
  2   47     600.000    GRADALT   Altitude for change in prec. grad.          [m]
  2   48       0.01     PGRAD1    Precipitation gradient above GRADALT        [1]
  2   49       0.03     CALB      Ageing factor for albedo                [1/day]
  2   50       0.30     CRAD      Radiation melt component                    [1]
  2   51       0.70     CONV      Convection melt component                   [1]
  2   52       0.00     COND      Condensation melt component                 [1]
  2   60        1.0     CEVPL     lake evapotranspiration adjustment fact     [1]
  2   61        0.9     ERED      evapotranspiration red. during interception [1]
  2   62       30.0     ICEDAY    Lake temperature time constant              [d]
  2   63      -0.66     TTGRAD    Temperature gradient for days without precip [deg/100 m]
  2   64      -0.46     TVGRAD    Temperature gradient for days with precip    [deg/100 m]
  2   65       0.18     PGRAD     Precipitation altitude gradient             [1/100 m]
  2   66       1.30     CBRE      Melt increase on glacier ice                [1]
  2   67       0.500    EP        EP( 1), Pot evapotranspiration, Jan    [mm/day] or [1]
  2   68       0.500    EP        EP( 2), Pot evapotranspiration, Feb    [mm/day] or [1]
  2   69       0.800    EP        EP( 3)
  2   70       1.100    EP        EP( 4)
  2   71       1.400    EP        EP( 5)
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  2   72        2.500    EP        EP( 6)
  2   73        2.400    EP        EP( 7)
  2   74        1.200    EP        EP( 8)
  2   75        1.100    EP        EP( 9)
  2   76        0.900    EP        EP(10)
  2   77        0.700    EP        EP(11)
  2   78        0.600    EP        EP(12)), Pot evapotranspiration, Dec    [mm/day] or [1]
  2   79      250.00     FC        Maximum soil water content          [mm]
  2   80        0.10     FCDEL     Pot.evapotr when content = FC*FCDEL  [1]
  2   81        2.5      BETA      Non-linearity in soil water zone     [1]
  2   82       10.00     INFMAX    maximum infiltration capacity        [mm/day]
  2   83
  2   84
  2   85        0.38     KUZ2      Quick time constant upper zone       [1/day]
  2   86       50.00     UZ1       Threshold quick runoff               [mm]
  2   87        0.04     KUZ1      Slow time constant upper zone        [1/day]
  2   88        5.60     PERC      Percolation to lower zone            [mm/day]
  2   89       0.007     KLZ       Time constant lower zone             [1/day]
  2   90        0.85     ROUT      (1), Routing constant (lake area, km2)
  2   91        0.05     ROUT      (2), Routing constant (rating curve const)
  2   92        0.05     ROUT      (3), Routing constant (rating curve zero)
  2   93        0.025    ROUT      (4), Routing constant (rating curve exp)
  2   94        0.075    ROUT      (5), Routing constant (drained area ratio)
  2   95        0.00     DECAY     (1), Feedback constant
  2   96        0.00     DECAY     (2), Feedback constant
  2   97        0.00     DECAY     (3), Feedback constant
  2   98        0.20     CE        Evapotranspiration constant          [mm/deg/day]
  2   99        0.2      DRAW      "draw up" constant                   [mm/day]
  2  100        65.7     LAT       Latitude                             [deg]
  2  101       -0.40     TGRAD(1)  Temperature gradient Jan             [deg/100m]
  2  102       -0.50     TGRAD(2)  Temperature gradient Feb             [deg/100m]
  2  103       -0.70     TGRAD(3)  Temperature gradient Mar             [deg/100m]
  2  104       -0.65     TGRAD(4)  Temperature gradient Apr             [deg/100m]
  2  105       -0.60     TGRAD(5)  Temperature gradient May             [deg/100m]
  2  106       -0.62     TGRAD(6)  Temperature gradient Jun             [deg/100m]
  2  107       -0.57     TGRAD(7)  Temperature gradient Jul             [deg/100m]
  2  108       -0.50     TGRAD(8)  Temperature gradient Aug             [deg/100m]
  2  109       -0.45     TGRAD(9)  Temperature gradient Sep             [deg/100m]
  2  110       -0.35     TGRAD(10) Temperature gradient Oct             [deg/100m]
  2  111       -0.35     TGRAD(11) Temperature gradient Nov             [deg/100m]
  2  112       -0.3     TGRAD(12) Temperature gradient Dec            [deg/100m]
  2  113        10.0     SPDIST    Uniformly distributed snow acc       [mm]
  2  114       100.0     SMINI     Inital soil moisture content         [mm]
  2  115       100.0     UZINI     Initial upper zone content           [mm]
  2  116       350.0     LZINI     Initial lower zone content           [mm]
  2  121           3     VEGT(1,1) Vegetation type 1, zone 1
  2  122           4     VEGT(2,1) Vegetation type 2, zone 1
  2  123         1.0     VEGA(1)   Vegetation 2 area, zone 1            [1]
  2  124         0.0     LAKE(1)   Lake area,         zone 1            [1]
  2  125           3     VEGT(1,2) Vegetation type 1, zone 2
  2  126           4     VEGT(2,2) Vegetation type 2, zone 2
  2  127         1.0     VEGA(2)   Vegetation 2 area, zone 2            [1]
  2  128         0.0     LAKE(2)   Lake area,         zone 2            [1]
  2  129           4     VEGT(1,3) Vegetation type 1, zone 3
  2  130           4     VEGT(2,3) Vegetation type 2, zone 3
  2  131         0.0     VEGA(3)   Vegetation 2 area, zone 3            [1]
  2  132         0.0     LAKE(3)   Lake area,         zone 3            [1]
  2  133           4     VEGT(1,4) Vegetation type 1, zone 4
  2  134           1     VEGT(2,4) Vegetation type 2, zone 4
  2  135         0.1     VEGA(4)   Vegetation 2 area, zone 4            [1]
  2  136         0.0     LAKE(4)   Lake area,         zone 4            [1]
  2  137           4     VEGT(1,5) Vegetation type 1, zone 5
  2  138           1     VEGT(2,5) Vegetation type 2, zone 5
  2  139         1.0     VEGA(5)   Vegetation 2 area, zone 5            [1]
  2  140         0.0     LAKE(5)   Lake area,         zone 5            [1]
  2  141           4     VEGT(1,6) Vegetation type 1, zone 6
  2  142           1     VEGT(2,6) Vegetation type 2, zone 6
  2  143         0.0     VEGA(6)   Vegetation 2 area, zone 6            [1]
  2  144         0.0     LAKE(6)   Lake area,         zone 6            [1]
  2  145           1     VEGT(1,7) Vegetation type 1, zone 7
  2  146           4     VEGT(2,7) Vegetation type 2, zone 7
  2  147         0.0     VEGA(7)   Vegetation 2 area, zone 7            [1]
  2  148         0.0     LAKE(7)   Lake area,         zone 7            [1]
  2  149           1     VEGT(1,8) Vegetation type 1, zone 8
  2  150           4     VEGT(2,8) Vegetation type 2, zone 8
  2  151         1.0     VEGA(8)   Vegetation 2 area, zone 8            [1]
  2  152         0.0     LAKE(8)   Lake area,         zone 8            [1]
  2  153           1     VEGT(1,9) Vegetation type 1, zone 9
  2  154           4     VEGT(2,9) Vegetation type 2, zone 9
  2  155         1.0     VEGA(9)   Vegetation 2 area, zone 9            [1]
  2  156         0.0     LAKE(9)   Lake area,         zone 9            [1]
  2  157           1     VEGT(1,10) Vegetation type 1, zone 10
  2  158           4     VEGT(2,10) Vegetation type 2, zone 10
  2  159         0.0     VEGA(10)   Vegetation 2 area, zone 10          [1]
  2  160         0.0     LAKE(10)   Lake area,         zone 10          [1]
FINIS
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Stuðlaskrá líkans með nýrri rennslisröð
(skrá: /vm/hbv/jsth/MM5/vhm26/param.nygögn.dat)

```
START  2V026
  2    0           13    PNO       Number of precipitation stations
  2    0  81-59          PID1      Identification for precip station 1
  2    0        571.5    PHOH1     Altitude precip station 1
  2    0         .0749   PWGT1     Weight precipitation station 1
  2    0  81-60          PID2
  2    0         511.    PHOH2
  2    0         .1649   PWGT2
  2    0  81-61          PID3
  2    0         420.2   PHOH3
  2    0         .1747   PWGT3
  2    0  81-62          PID1      Identification for precip station 1
  2    0        351.4    PHOH1     Altitude precip station 1
  2    0         .0216   PWGT1     Weight precipitation station 1
  2    0  82-59          PID1      Identification for precip station 1
  2    0        670.7    PHOH1     Altitude precip station 1
  2    0         .0461   PWGT1     Weight precipitation station 1
  2    0  82-60          PID1      Identification for precip station 1
  2    0        562.4    PHOH1     Altitude precip station 1
  2    0         .0375   PWGT1     Weight precipitation station 1
  2    0  82-61          PID1      Identification for precip station 1
  2    0        422.1    PHOH1     Altitude precip station 1
  2    0         .1188   PWGT1     Weight precipitation station 1
  2    0  82-62          PID1      Identification for precip station 1
  2    0        397.8    PHOH1     Altitude precip station 1
  2    0         .1563   PWGT1     Weight precipitation station 1
  2    0  82-63          PID1      Identification for precip station 1
  2    0        215.9    PHOH1     Altitude precip station 1
  2    0         .1066   PWGT1     Weight precipitation station 1
  2    0  82-64          PID1      Identification for precip station 1
  2    0        139.5    PHOH1     Altitude precip station 1
  2    0         .0062   PWGT1     Weight precipitation station 1
  2    0  83-63          PID1      Identification for precip station 1
  2    0        165.6    PHOH1     Altitude precip station 1
  2    0         .0113   PWGT1     Weight precipitation station 1
  2    0  83-64          PID1      Identification for precip station 1
  2    0         56.6    PHOH1     Altitude precip station 1
  2    0         .0799   PWGT1     Weight precipitation station 1
  2    0  83-65          PID1      Identification for precip station 1
  2    0         10.7    PHOH1     Altitude precip station 1
  2    0         .0012   PWGT1     Weight precipitation station 1
  2    0            4    TNO       Number of temperature stations
  2    0  81-59          TID1      Identification for temp station 1
  2    0        571.5    THOH1     Altitude temp station 1
  2    0         .203    TWGT1     Weight temp station 1
  2    0  81-61          TID2
  2    0         420.2   THOH2
  2    0         .384    TWGT2
  2    0  82_62          TID3
  2    0         307.8   THOH3
  2    0         .282    TWGT3
  2    0  83_64          TID3
  2    0          56.6   THOH3
  2    0         .131    TWGT3
  2    0            1    QNO       Number of discharge stations
  2    0  vhm026         QID       Identification for discharge station
  2    0          1.     QWGT      Scaling factor for discharge
  2    0       269.67    AREAL     Catchment area                      [km2]
  2    4        0.000    MAGDEL    Regulation reservoirs               [1]
  2    5       10.000    HYPSO ( 1,1), low point              [m]
  2    6      150.000    HYPSO ( 2,1)
  2    7      250.000    HYPSO ( 3,1)
  2    8      300.000    HYPSO ( 4,1)
  2    9      400.000    HYPSO ( 5,1)
  2   10      450.000    HYPSO ( 6,1)
  2   11      550.000    HYPSO ( 7,1)
  2   12      600.000    HYPSO ( 8,1)
  2   13      700.000    HYPSO ( 9,1)
  2   14      750.000    HYPSO (10,1)
  2   15      950.000    HYPSO (11,1), high point
  2   16        0.000    HYPSO ( 1,2), Part of total area below HYPSO (1,1) = 0
  2   17        0.087    HYPSO ( 2,2)
  2   18        0.189    HYPSO ( 3,2)
  2   19        0.267    HYPSO ( 4,2)
  2   20        0.550    HYPSO ( 5,2)
  2   21        0.618    HYPSO ( 6,2)
  2   22        0.801    HYPSO ( 7,2)
  2   23        0.874    HYPSO ( 8,2)
  2   24        0.950    HYPSO ( 9,2)
  2   25        0.974    HYPSO (10,2)
  2   26        1.000    HYPSO (11,2), Part of total area below HYPSO (11,1) = 1
  2   27        0.000    BREPRO( 1), Glacier area, part of total area, below HYPSO( 1,1) (=0.0)
  2   28        0.000
  2   29        0.000
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2   30        0.000
2   31        0.000
2   32        0.000
2   33        0.000
2   34        0.000
2   35        0.000
2   36        0.000
2   37        0.000    BREPRO(11), Glacier area, part of total area, below HYPSO(11,1)
2   38
2   39      240.00     NDAG      Day no for conversion of glacier snow to ice
2   40       -0.50     TX        Threshold temperature for snow/ice            [C]
2   41       -1.00     TS        Threshold temperature fo no melt              [C]
2   42        5.20     CX        Melt index                            [mm/deg/day]
2   43        0.02     CFR       Refreeze efficiency                           [1]
2   44        0.01     LV        Max rel. water content in snow                [1]
2   45        1.05     PKORR     Precipitaion correction for rain              [1]
2   46        1.00     SKORR     Additional precipitation corection for snow at gauge [1]
2   47      200.00     GRADALT   Altitude for change in prec. grad.            [m]
2   48        0.00     PGRAD1    Precipitation gradient above GRADALT          [1]
2   49        0.03     CALB      Ageing factor for albedo                  [1/day]
2   50        0.30     CRAD      Radiation melt component                      [1]
2   51        0.70     CONV      Convection melt component                     [1]
2   52        0.00     COND      Condensation melt component                   [1]
2   60        1.00     CEVPL     lake evapotranspiration adjustment fact       [1]
2   61        0.90     ERED      evapotranspiration red. during interception   [1]
2   62        30.0     ICEDAY    Lake temperature time constant                [d]
2   63       -0.67     TTGRAD    Temperature gradient for days without precip [deg/100 m]
2   64       -0.66     TVGRAD    Temperature gradient for days with precip    [deg/100 m]
2   65        0.00     PGRAD     Precipitation altitude gradient              [1/100 m]
2   66        1.30     CBRE      Melt increase on glacier ice                  [1]
2   67        0.500    EP        EP( 1), Pot evapotranspiration, Jan    [mm/day] or [1]
2   68        0.500    EP        EP( 2), Pot evapotranspiration, Feb    [mm/day] or [1]
2   69        0.800    EP        EP( 3)
2   70        1.100    EP        EP( 4)
2   71        1.400    EP        EP( 5)
2   72        2.500    EP        EP( 6)
2   73        2.400    EP        EP( 7)
2   74        1.200    EP        EP( 8)
2   75        1.100    EP        EP( 9)
2   76        0.900    EP        EP(10)
2   77        0.700    EP        EP(11)
2   78        0.600    EP        EP(12)), Pot evapotranspiration, Dec    [mm/day] or [1]
2   79      250.00     FC        Maximum soil water content           [mm]
2   80        0.10     FCDEL     Pot.evapotr when content = FC*FCDEL  [1]
2   81        1.85     BETA      Non-linearity in soil water zone     [1]
2   82       10.00     INFMAX    maximum infiltration capacity        [mm/day]
2   83
2   84
2   85        0.5      KUZ2      Quick time constant upper zone       [1/day]
2   86       45.00     UZ1       Threshold quick runoff               [mm]
2   87        0.14     KUZ1      Slow time constant upper zone        [1/day]
2   88        5.60     PERC      Percolation to lower zone            [mm/day]
2   89       0.007     KLZ       Time constant lower zone             [1/day]
2   90        0.85     ROUT      (1), Routing constant (lake area, km2)
2   91        0.05     ROUT      (2), Routing constant (rating curve const)
2   92        0.05     ROUT      (3), Routing constant (rating curve zero)
2   93        0.025    ROUT      (4), Routing constant (rating curve exp)
2   94        0.075    ROUT      (5), Routing constant (drained area ratio)
2   95        0.00     DECAY     (1), Feedback constant
2   96        0.00     DECAY     (2), Feedback constant
2   97        0.00     DECAY     (3), Feedback constant
2   98        0.20     CE        Evapotranspiration constant          [mm/deg/day]
2   99        0.2      DRAW      "draw up" constant                   [mm/day]
2  100        65.7     LAT       Latitude                             [deg]
2  101       -0.60     TGRAD(1)  Temperature gradient Jan             [deg/100m]
2  102       -0.63     TGRAD(2)  Temperature gradient Feb             [deg/100m]
2  103       -0.65     TGRAD(3)  Temperature gradient Mar             [deg/100m]
2  104       -0.62     TGRAD(4)  Temperature gradient Apr             [deg/100m]
2  105       -0.72     TGRAD(5)  Temperature gradient May             [deg/100m]
2  106       -1.00     TGRAD(6)  Temperature gradient Jun             [deg/100m]
2  107       -0.79     TGRAD(7)  Temperature gradient Jul             [deg/100m]
2  108       -0.61     TGRAD(8)  Temperature gradient Aug             [deg/100m]
2  109       -0.65     TGRAD(9)  Temperature gradient Sep             [deg/100m]
2  110       -0.61     TGRAD(10) Temperature gradient Oct             [deg/100m]
2  111       -0.59     TGRAD(11) Temperature gradient Nov             [deg/100m]
2  112       -0.62     TGRAD(12) Temperature gradient Dec             [deg/100m]
2  113        10.0     SPDIST    Uniformly distributed snow acc       [mm]
2  114       100.0     SMINI     Inital soil moisture content         [mm]
2  115       100.0     UZINI     Initial upper zone content           [mm]
2  116       350.0     LZINI     Initial lower zone content           [mm]
2  121           3      VEGT(1,1) Vegetation type 1, zone 1
2  122           4      VEGT(2,1) Vegetation type 2, zone 1
2  123         1.0      VEGA(1)   Vegetation 2 area, zone 1            [1]
2  124         0.0      LAKE(1)   Lake area,         zone 1            [1]
2  125           3      VEGT(1,2) Vegetation type 1, zone 2
2  126           4      VEGT(2,2) Vegetation type 2, zone 2
2  127         1.0      VEGA(2)   Vegetation 2 area, zone 2            [1]
2  128         0.0      LAKE(2)   Lake area,         zone 2            [1]
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  2  129          4     VEGT(1,3) Vegetation type 1, zone 3
  2  130          4     VEGT(2,3) Vegetation type 2, zone 3
  2  131        0.0     VEGA(3)   Vegetation 2 area, zone 3          [1]
  2  132        0.0     LAKE(3)   Lake area,         zone 3          [1]
  2  133          4     VEGT(1,4) Vegetation type 1, zone 4
  2  134          1     VEGT(2,4) Vegetation type 2, zone 4
  2  135        0.1     VEGA(4)   Vegetation 2 area, zone 4          [1]
  2  136        0.0     LAKE(4)   Lake area,         zone 4          [1]
  2  137          4     VEGT(1,5) Vegetation type 1, zone 5
  2  138          1     VEGT(2,5) Vegetation type 2, zone 5
  2  139        1.0     VEGA(5)   Vegetation 2 area, zone 5          [1]
  2  140        0.0     LAKE(5)   Lake area,         zone 5          [1]
  2  141          4     VEGT(1,6) Vegetation type 1, zone 6
  2  142          1     VEGT(2,6) Vegetation type 2, zone 6
  2  143        0.0     VEGA(6)   Vegetation 2 area, zone 6          [1]
  2  144        0.0     LAKE(6)   Lake area,         zone 6          [1]
  2  145          1     VEGT(1,7) Vegetation type 1, zone 7
  2  146          4     VEGT(2,7) Vegetation type 2, zone 7
  2  147        0.0     VEGA(7)   Vegetation 2 area, zone 7          [1]
  2  148        0.0     LAKE(7)   Lake area,         zone 7          [1]
  2  149          1     VEGT(1,8) Vegetation type 1, zone 8
  2  150          4     VEGT(2,8) Vegetation type 2, zone 8
  2  151        1.0     VEGA(8)   Vegetation 2 area, zone 8          [1]
  2  152        0.0     LAKE(8)   Lake area,         zone 8          [1]
  2  153          1     VEGT(1,9) Vegetation type 1, zone 9
  2  154          4     VEGT(2,9) Vegetation type 2, zone 9
  2  155        1.0     VEGA(9)   Vegetation 2 area, zone 9          [1]
  2  156        0.0     LAKE(9)   Lake area,         zone 9          [1]
  2  157          1     VEGT(1,10) Vegetation type 1, zone 10
  2  158          4     VEGT(2,10) Vegetation type 2, zone 10
  2  159        0.0     VEGA(10)   Vegetation 2 area, zone 10        [1]
  2  160        0.0     LAKE(10)   Lake area,         zone 10        [1]
FINIS
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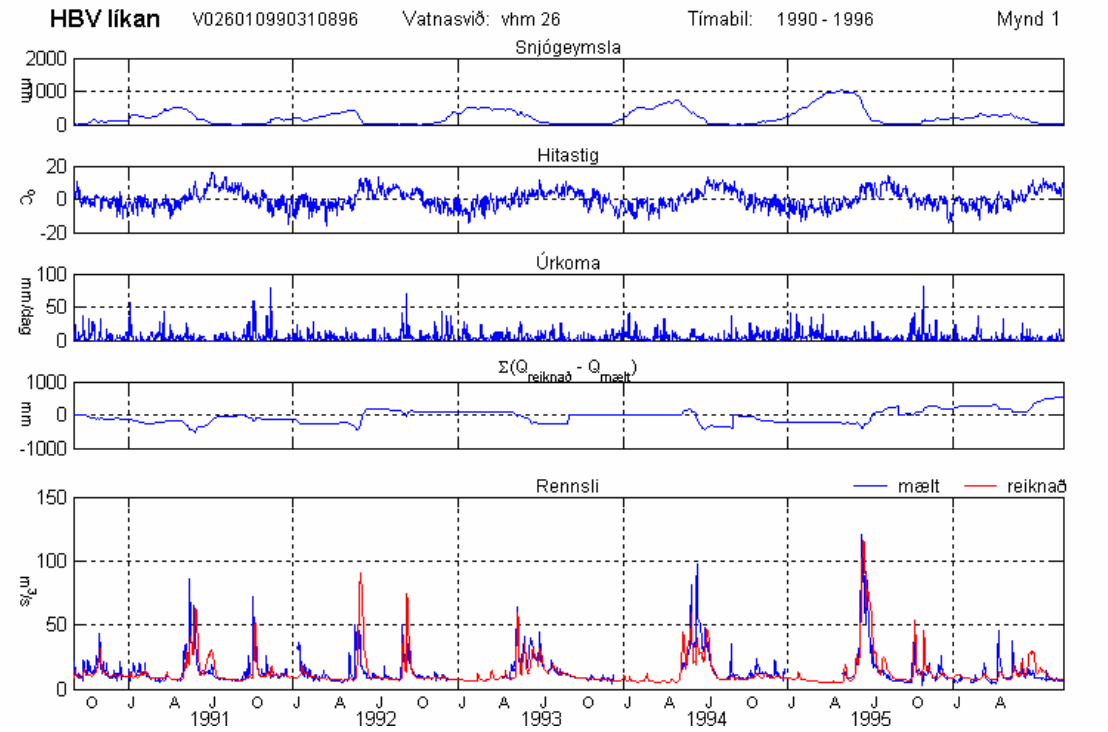
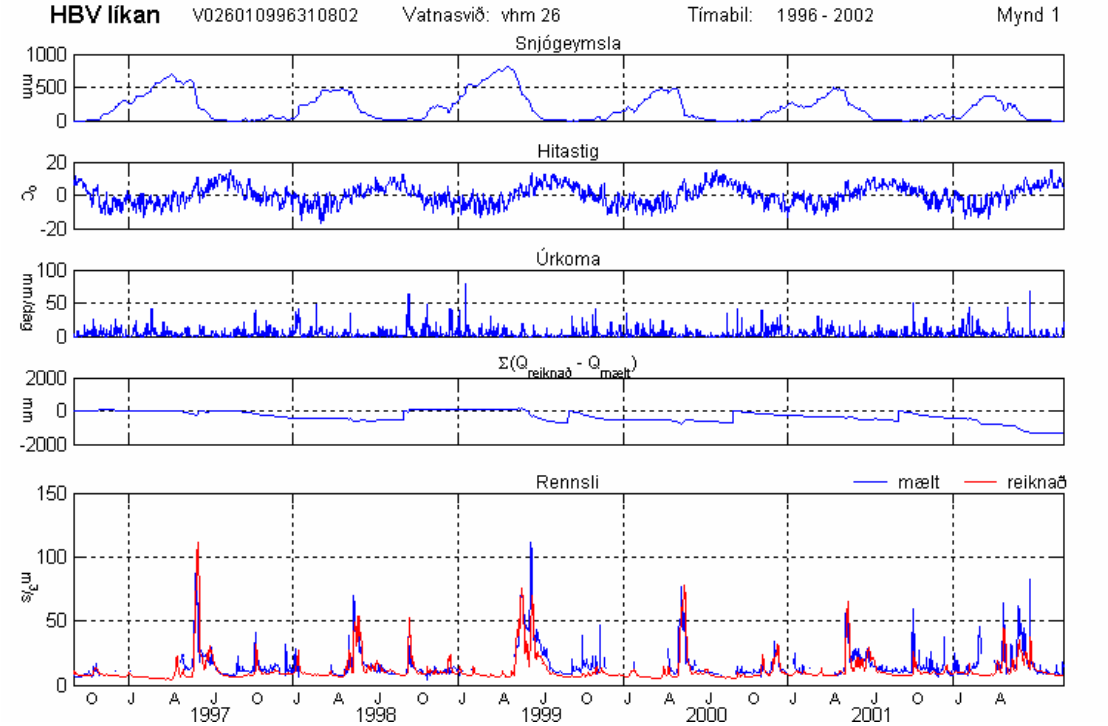
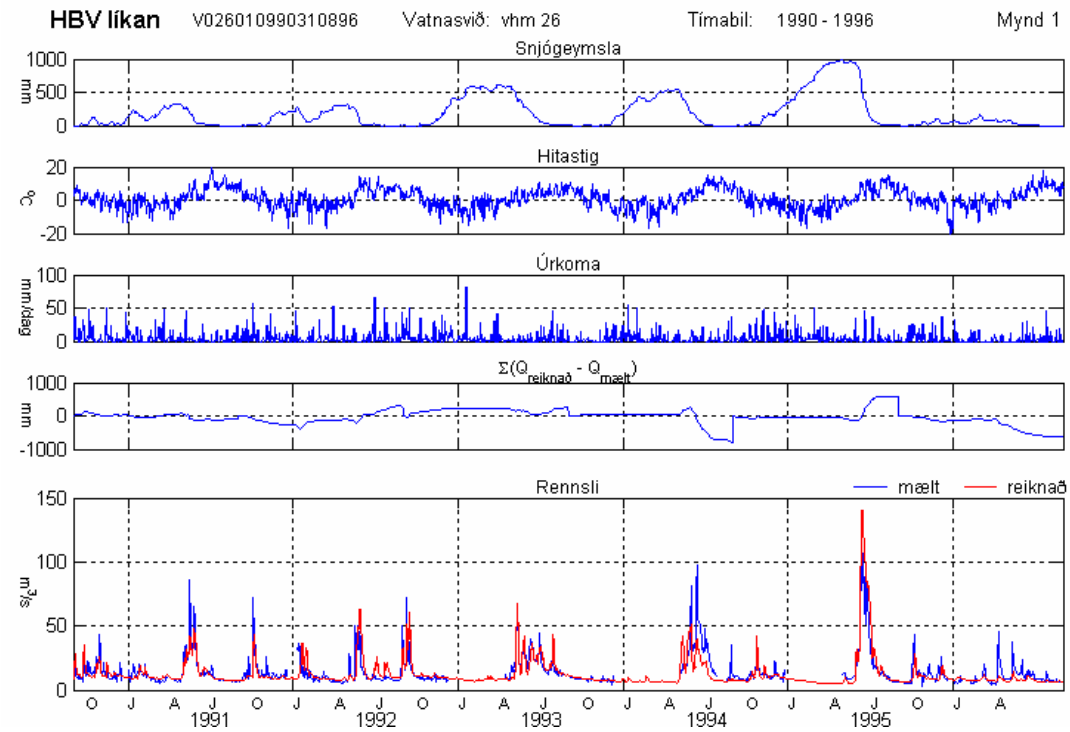
Viðauki II
Línurit með niðurstöðum HBV-líkananna



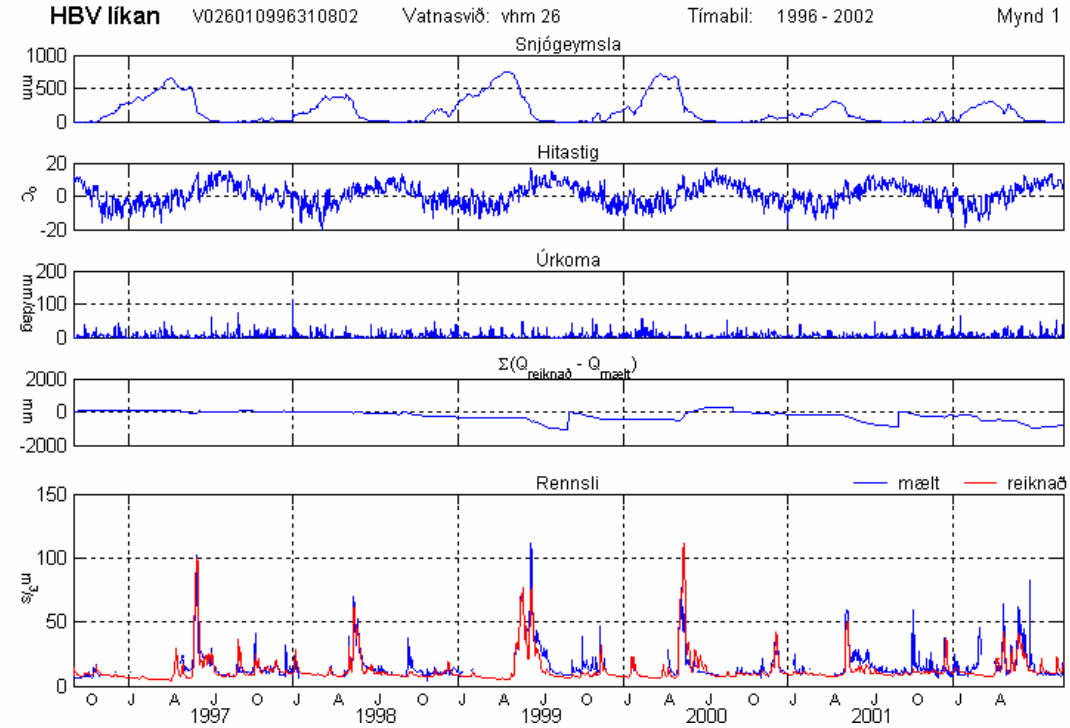
Mynd 1: Niðurstöður samanburðarlíkans á vatnsárunum 1990-1995



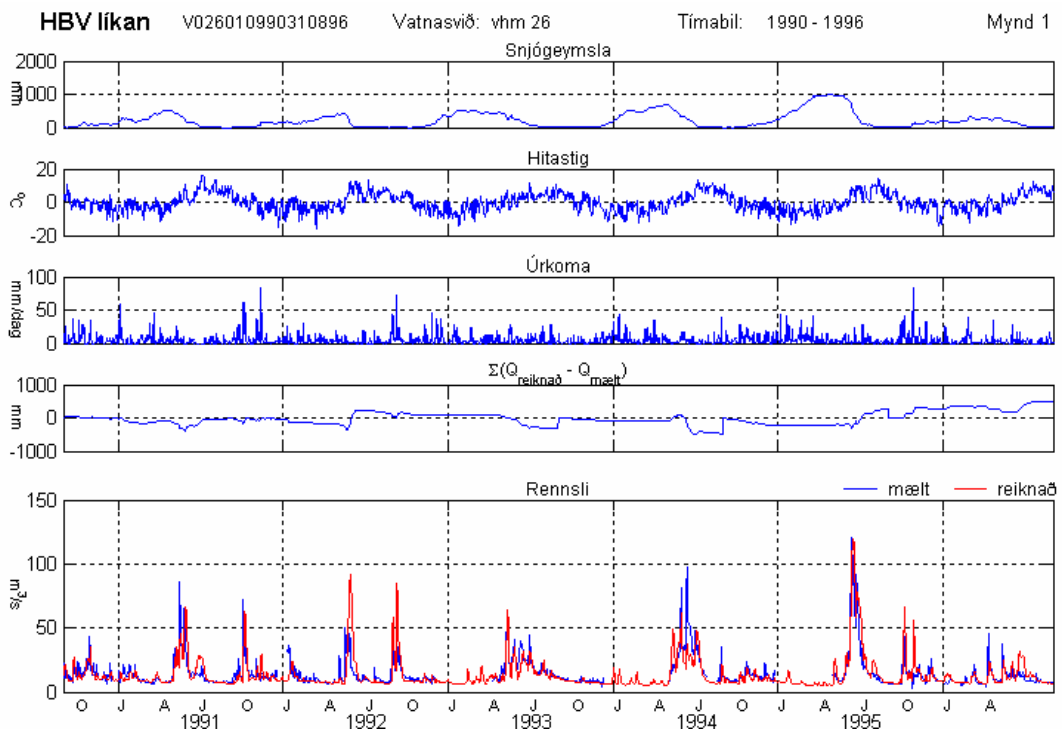
Mynd 2: Niðurstöður samanburðarlíkans á vatnsárunum 1996-2001



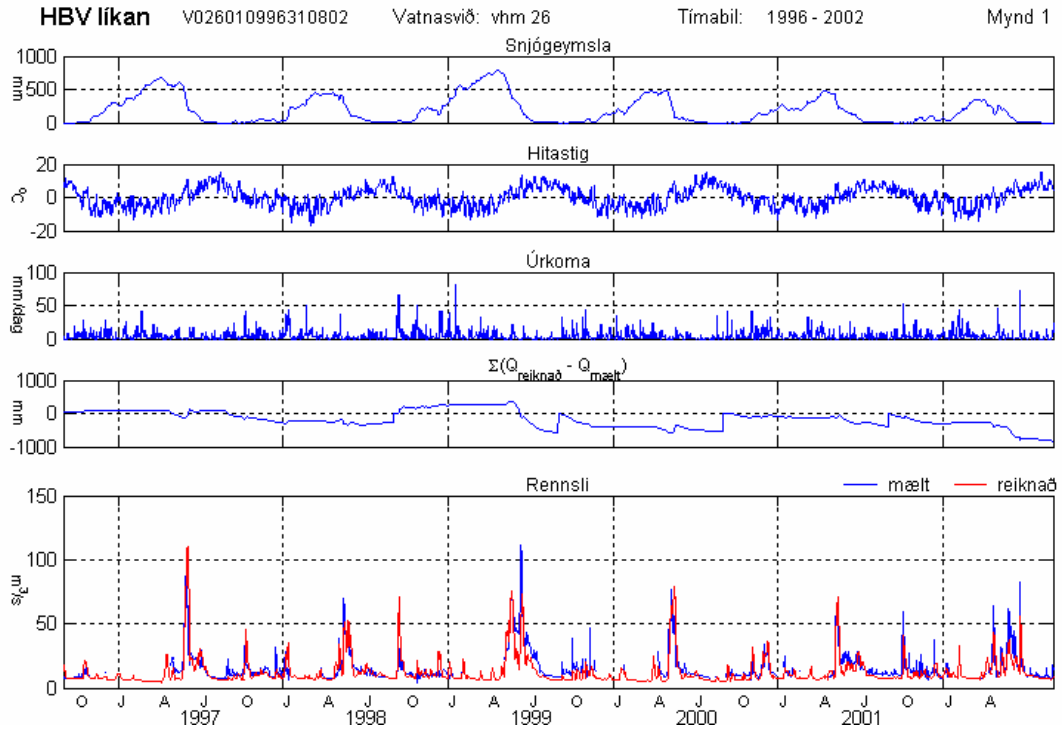
Mynd 3: Niðurstöður líkans GOG á vatnsárunum 1990-1995



Mynd 4: Niðurstöður líkans GOG á vatnsárunum 1996-2001

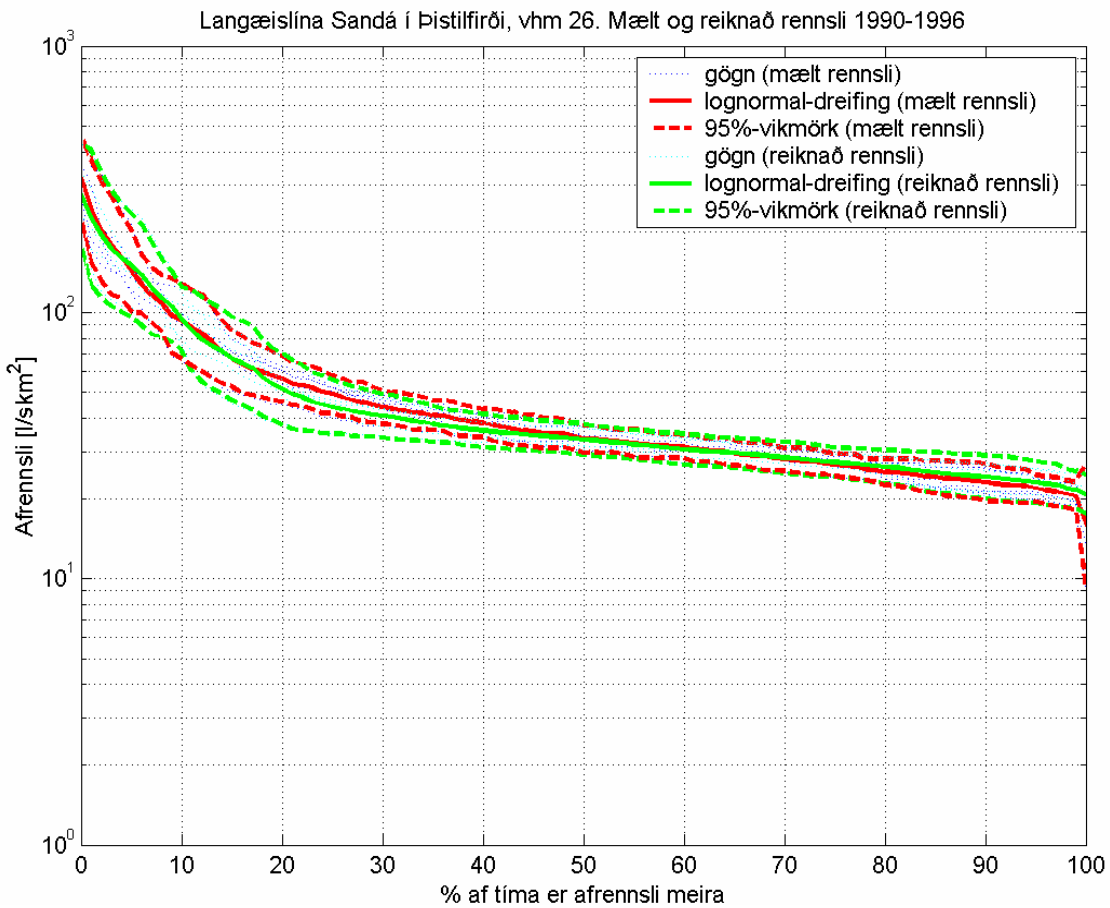


Mynd 5: Niðurstöður líkans með nýrri rennslisröð á vatnsárunum 1990-1995

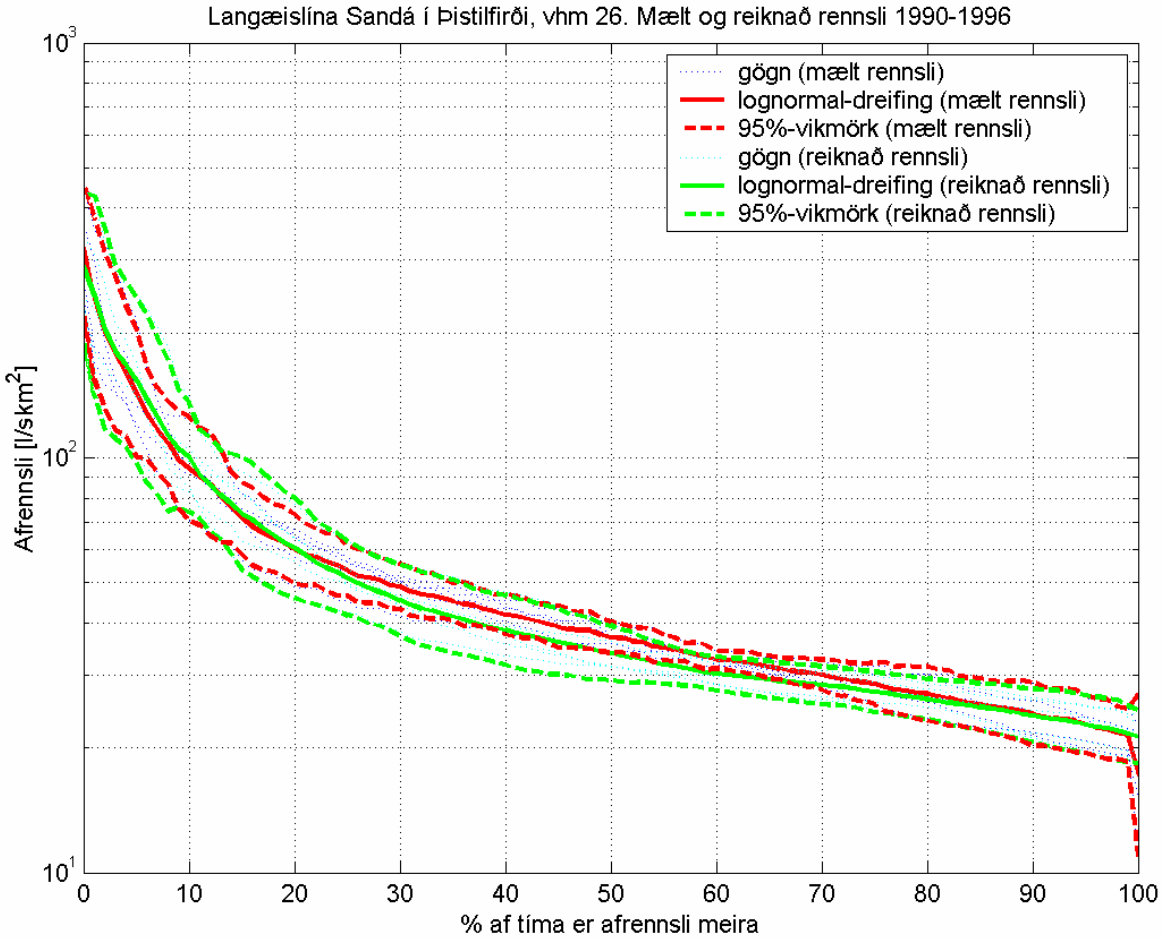


Mynd 6: Niðurstöður líkans með nýrri rennslisröð á vatnsárunum 1996-2001

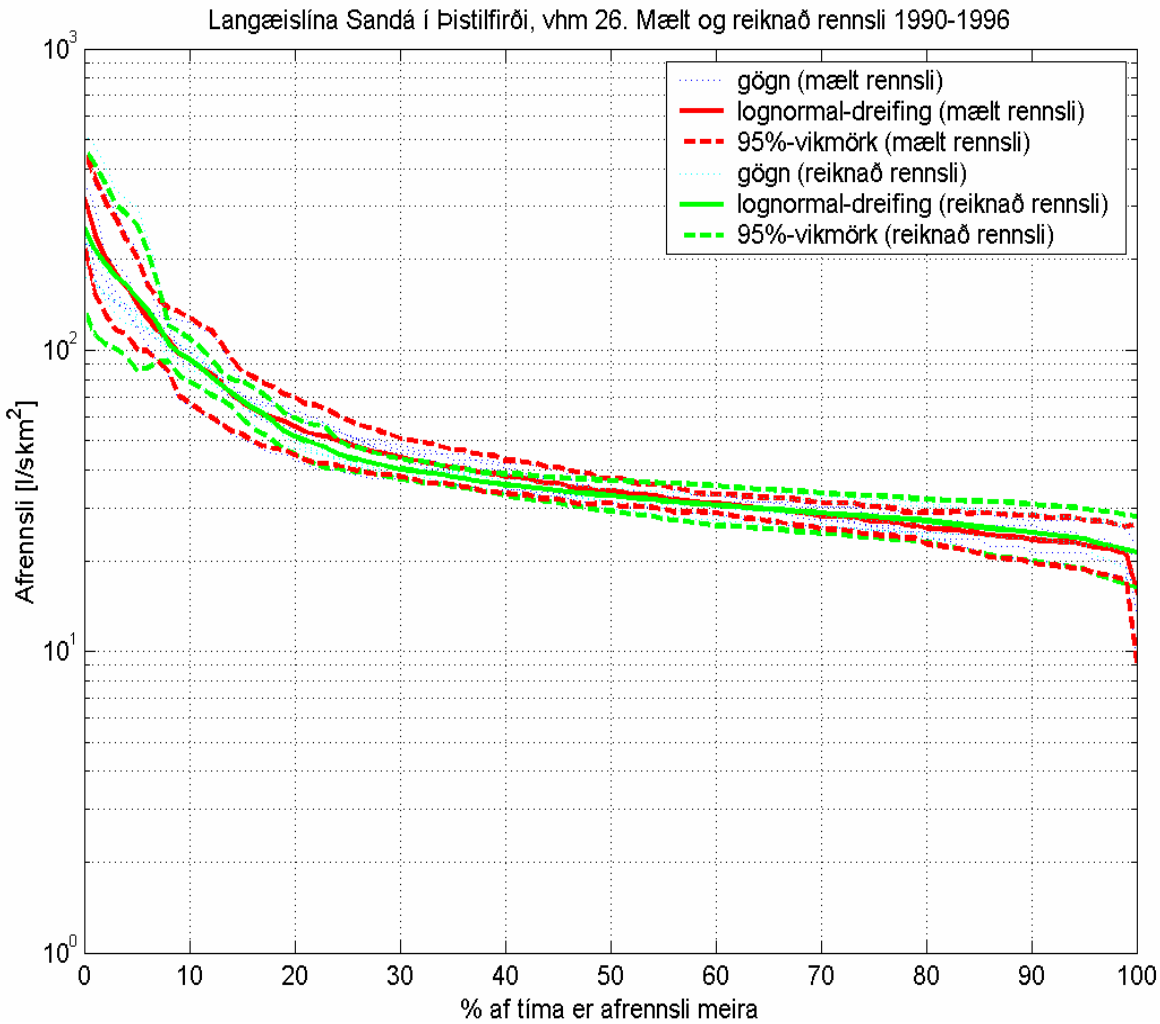
Viðauki III
Langæislínur reiknaðs og mælds rennslis HBV-líkananna



Mynd 7: langæislínur samanburðarlíkans fyrir vatnsárin 1990-1995



Mynd 8: Langæislínur HBV-líkans GOG fyrir vatnsárin 1990-1995



Mynd 8: Langæislínur HBV-líkans GOG fyrir vatnsárin 1990-1995